JAMES OSSUARY FOUND FAKE • THE HAUNTED PLANTATION • QUESTIONING THE RORSCHACH

Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON
Volume 27, No. 5 • September/October 2003

What Does Education *REALLY* Do?

The Politics and Bad Science of Alternative Medicine

THEY SEE DEAD PEOPLE— OR DO THEY?
In the Studios with John Edward and James Van Praagh

Energy, Homeopathy, and Hypnosis in SANTA FE

NOSTRADAMUS: The Power of Ambiguous Specificity

FAKING UFO Photos

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EDITOR'S NOTE

From CAM to Scam

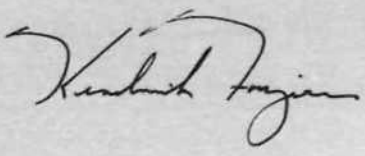
"Complementary and alternative medicine" (CAM) has become a fancy institutionalized term for a mixture of at best marginally respectable professed remedies and outright hooey. "Untested medical remedies" would be a better and more honest moniker. But the language comes from the proponents, not scientific critics. And that's typical. In this issue, Kimball Atwood IV, M.D., painstakingly documents how politics and proponents continue to distort the science carried out by the National Center for Complementary and Alternative Medicine (NCCAM), the taxpayer-funded research institute that was born out of the political influence of a few elected officials who had become enamored of various untested remedies. Whatever they professed, they cared little about whether it carried out good science. The NCCAM advisory board has always been dominated by proponents of the treatments it supposedly was to investigate. Skeptics need not apply. And the result has been a continuation of questionable science about questionable remedies and treatments. And that is a prescription for waste of taxpayers' money and bad or possibly even fraudulent science.

* * *

How does educational level affect one's credulity toward pseudoscience? The answer isn't simple. In fact, the situation has been fairly confusing. In this issue, Susan Carol Losh, assistant professor of educational psychology at Florida State University, and her colleagues attempt to untangle some of the conundrums. They examine twenty-three years of national survey data from the National Science Foundation's Surveys of Public Understanding of Science, 1979–2001. Collectively, says Losh, these surveys include more material about pseudoscience belief than any other national survey. Furthermore, they contain a wealth of detail about educational level, including not just level but major field and exposure to science courses. The researchers found, as did previous studies, that as degree level rises so too does pseudoscience rejection, But the more detailed data shows that the net effect of degree level drops by half or three-quarters when refinements to educational level are made. Other factors generally are at work. Exposure to science courses as a predictor of rejection of pseudoscience did stand up to all the controls for age, time, gender, religiosity, and so on—except for one question about UFOs.

* * *

James Underdown of our new Center for Inquiry–West writes about his and his colleagues first-hand investigation visiting the shows of television "mediums" John Edwards and James van Praagh. The surprise was that there were no surprises. Gimmicks and technology weren't needed to explain what's going on. Just old-fashioned cold-reading, a highly conditioned and compliant audience, and judicious editing of videotape are all that's required to give an impression to those so inclined that something mediumistic might have happened. The editing can all be justified as purely normal cleaning up and condensation, but amazingly what gets left out are many of the wrong answers and unsuccessful "fishing" types of questions. The few "hits" of course remain.



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James Ossuary Verdict: Ossuary Genuine, Inscription Fake

The James ossuary, touted as the mortuary box of Jesus' brother, is a fake, along with another recently "discovered" artifact owned by the same Jerusalem dealer, the Israeli Antiquities Authority concluded. The dealer, Oded Golan, was arrested by police at his Tel Aviv home, where forgery equipment was discovered.

The ossuary—a limestone box used to hold skeletal remains—bears an Aramaic inscription, "James, son of Joseph, brother of Jesus." *Biblical Archeology Review* and other sources, including a book by Hershel Shanks and Ben Witherington III, *The Brother of James* (2003), promoted the box and its inscription as authentic. Skeptics cautioned that the provenance was unknown, and several scholars suggested that the phrase "brother of Jesus" might have been a late addition.

A special report in SKEPTICAL INQUIRER, "Bone (Box) of Contention" (Joe Nickell, March/April 2003), presented evidence that an antique ossuary had been recently carved with a false inscription and a fake patina (coating of age) possibly added.

That scenario was proved accurate by a committee of experts assembled by the Israeli Antiquities Authority and utilizing a panoply of sophisticated analytical techniques. The patina on the letters was discovered to be false, consisting of powdered chalk suspended in water and applied to the inscription. At Oded Golan's home, reported CNN.com, police discovered forgery items "including stencils, stones, and partially completed forgeries."

—Joe Nickell

Joe Nickell is CSICOP's Senior Research Fellow and author of Detecting Forgery.

WELL, SKEPTIC, WILL THAT DO IT?
JAMES, SON OF JOSEPH, BROTHER OF JESUS, BORN OF MARY IN NEDD'S REIGN, GREW UP IN EGYPT, SUMMERED IN GALILEE, LEADER OF THE CHURCH IN JERUSALEM AFTER A LONG ILLNESS DIED IN 73.

One Nation's Victory for Sanity Over Alternative Medicine

What began as either an act of carelessness or a deliberate attempt to flout regulations by a manufacturer has resulted in a furor that calls into question the future of the entire "complementary medicine" industry in Australia.

Australia has a two-tiered regulation system for health-related devices, medicines, and food supplements, administered by the Therapeutic Goods Administration (TGA—the Australian counterpart of the Food and Drug Administration). It requires all prescription, plus some non-prescription pharmacy medicines (paracetamol, aspirin, etc.) to be "registered" together with evidence of their safety, quality control in manufacture, and efficacy. Other items, those that are considered to present lower levels of risk, are "listed," requiring only evidence of safety and quality control. The overwhelming proportion of complementary medicines, vitamins, minerals, and food supplements sold in Australia are listed items. All products are required to display on their packaging either an AustR(egistered) or AustL(isted) number, indicating the level at which they are regulated.

In January 2003, TGA was notified of serious illnesses suffered by some eighty people (nineteen requiring hospitalization) who had taken a popular travel sickness preventative medicine, Travacalm, a Registered product. Concerned by this, TGA conducted an analysis of Travacalm purchased from a pharmacy, revealing that tablets in one package contained amounts of the active ingredient, hyoscine, varying between none at all and seven times the safe dosage.

These alarming results caused TGA to conduct an immediate audit of the manufacturer, Pan Pharmaceuticals Ltd., to test its compliance with regulations. Pan, a listed public company, makes and markets a wide variety of complementary healthcare products under its own brand names, as well as being a contract manufacturer for several other companies. The audit found serious quality control failures in the process, along with other faulty manufacturing practices that rang alarm bells.

TGA then expanded its audit to all products manufactured by the company, including not only its relatively small range of Registered products, but also its far larger range of Listed items. At that stage, Pan was the manufacturer of a high proportion of listed supplements and medicines sold in Australia, as well as others for export to forty countries.

Charging Pan with unacceptable manufacturing procedures, inadequate quality control, falsification of records, and other misdemeanors, TGA revoked its license to manufacture in April 2003. It then instituted an immediate compulsory product recall of (at last count and ongoing) more than 1,500 products, by far the largest recall of health-related (or any other) products in the nation's history. Several companies marketing products made by Pan, but sold under their own brand names, were caught in the net, with fourteen who failed to comply with TGA reporting procedures also having their licenses revoked.

Consternation, verging on panic, reigned throughout the entire alternative health industry. Health food shops and pharmacies denuded their shelves of suspect vitamin, herbal, and mineral supplements; spokespeople for the alternative/complementary healthcare industry took to the newspapers and the airwaves in serried ranks, aiming blame at the regulators, the government, the medical "establishment," multinational pharmaceutical companies, and anyone else who they thought appropriate; lawsuits were launched in all directions; bewildered consumers stopped taking their (often self-prescribed) pills and besieged their suppliers demanding refunds. To date, no cases have been reported of anyone suffering any ill effects from ceasing to take their pills.

Aided by an unfortunate relaxation of the advertising regulations for healthcare products, sales of complementary medicines have undergone massive increases in the past five years, with a 2001 study conducted by Adelaide University suggesting that they amounted to $2.4 billion (Australian) per year. Once the staple of health food stores, they have since become major sellers in pharmacies, some of which display a whole wall of assorted varieties of snake-oil remedies. With that much money at stake, it is hardly surprising that the level of complaint from the industry was high.

The spin they sought to put on the facts was higher still. Representatives of the industry lobby group the Complementary Healthcare Council (made up of manufacturers, resellers, and "alternative" practitioners) approached the Federal Government, seeking a grant of $11 million of taxpayers' money to fund "public education on the benefits of complementary health supplements." Amazed at the sheer effrontery of this claim, Australian Skeptics immediately countered with a petition to its local Member of Parliament, requesting that no such funds be allocated, suggesting rather that any available money would be better spent on educating the public that most supplements were unnecessary and many other complementary medicines were untested for efficacy. (As our local MP is both a medical practitioner and the Federal Minister for Education, we felt we were on firm ground.)

Then things went from bad to worse for the industry. While the media interest was at its height, the Premier of New South Wales, Hon. Bob Carr MP, appeared on TV saying, ". . . it appears that most of these products give no more benefit than colored water"; a national TV science program, *Catalyst*, aired a report on their investigation into various herbal remedies, which showed wide variations in the amount of active ingredient and lack of uniformity in many preparations; the chairman of the Australian Olympic Committee, John Coates (alert to the threat posed to athletes by inadvertent ingestion of proscribed substances), called for much sterner regulation of the labeling of supplements.

More important, it now seems that Australian Skeptics' long years of advocacy that providers of "alternative" medicine be held to no lower standards of accountability than apply to orthodox

medicine might at last bear fruit. The government has introduced legislation requiring a much higher degree of compliance, evidence of efficacy, and accuracy in labeling for manufacturers of complementary medicines, with very large financial penalties for noncompliance. Further, it has announced an inquiry into the entire alternative medicine industry, to report to Parliament within three months. Sanity might just stand a chance.

One final lighter note. During the media frenzy a group of enterprising orchardists placed advertisements in metropolitan newspapers. Showing simply a picture of a shiny red apple, it bore the cogent caption, "The Alternative to Alternative Medicine." We couldn't have put it better ourselves.

—Barry Williams

Barry Williams is Executive Officer of Australian Skeptics Inc., Roseville, NSW, Australia. E-mail: skeptics@kasm.com.au; Web site: www.skeptics.com.au.

Russian Academy of Sciences Waking up to False Science

There are some important recent developments for Russian skeptics and humanists. The Presidium of the Russian Academy of Sciences devoted its regular meeting on May 27, 2003, to the problem of false science and charlatanism.

By the end, it had supported all proposals to fight pseudoscience and promised to bolster the Academy's Committee Against False Science and Falsification of Scientific Data, established in 1998. More than fifty elite members of the Presidium, a major scientific institution, attended this event.

The key speaker was Edward Kruglyakov, vice-director of the Institute for Nuclear Physics (Novosibirsk) and chair of the Committee for Struggle against False Science. His report, "False Science: How It Threatens Science and Society" was impressive and filled with many shocking facts and statistics. [See his article "Why Is Pseudoscience Dangerous?" and three other reports on Science and Pseudoscience in Russia, SKEPTICAL INQUIRER, July/August 2002.]

According to Kruglyakov, hundreds of domestic medical "apparatus" came on the Russian market promising help for up to 350 different diseases. Many are based on so-called quantum medicine. One series of devices claims to catch radiation from diseased cells and return it to them in the "opposite phase," leading to recovery of the patient. Some devices claim to treat people by directing radiation of the healthy cells to the sick ones. Some devices generate electromagnetic or gravitational energy to affect a cure; others do not even need electric power.

Valerii Kuvakin

As a rule all these "medical devices" have licenses from the Ministry of Healthcare or the Chief Sanitary Doctor of the Russian Federation. The most sensational among them is the so-called neutrino generator for treating cancer patients. An immoral inventor of this worthless "masterpiece" claims that he can produce neutrinos in a process of passing acoustic waves through a vacuum. But it is a well known fact that acoustic waves cannot go through a vacuum. Technically it is also extremely difficult to even detect neutrinos.

One of the newest "discoveries" is the holographic patch, a "flat torsion generator," as a protector against harmful radiation of cell telephones, microwaves, TV sets, and so on. A fury of resistance meets anybody who appeals to the courts to take away the licenses from these charlatans. All attempts by activists of Russian Humanist Society and its magazine *Zdravyj Smysl* (Common Sense) to revoke the licenses of these "biofield correctors" were stopped by the office of General Procurator.

Pseudoscience in Russia has become a well-organized power, polluting all levels of the state institutions. The areas where tricksters are most active are the Ministry of Defense, Ministry of Extreme (Extraordinary) Situations, and State Duma (Russian Parliament). Speaking on the national TV channel RTR, the Minister of Extreme Situations, Sergey Shoigu, said his Ministry uses extrasensory data and astrological predictions. A military unit, #10003 of the Ministry of Defense, has a laboratory that for many years conducted parapsychological experiments and works with psychics, sorcerers, etc. The publishing house of the Ministry of Education, "Prosveschenie" (Enlightenment), published a guide for students titled *Stories About Astrology*. There are numerous brochures written by astrologers directly for students and pupils. The Ministry of Internal Affairs is also involved in using mystical practices in criminal investigations.

The first President of Russia, Boris Yeltsin, was surrounded by ESP promoters. It was a general, G. Rogozin, who predicted a nuclear war in August 1999 and a self-proclaimed Ph.D. in physics and math, G. Grabovoi, who claims to have the ability to decrease the power of a nuclear explosion during underground testing. His claims were debunked by special experts and he was called a liar. Nevertheless even today he is a lecturer for the Ministry of Extraordinary Situations and adviser to the Security Council of the Russian Federation.

Absurdities with astrology reached a peak when "military astrologer" A. Buzinov invented a way to determine the birthdays of tanks, aircraft, warships, and so on. On the basis of astrological calculations he claims to predict technical catastrophes in military forces. It is common now for Orthodox priests to baptize and sanctify warships, submarines, missiles, and tanks. It is easy to imagine what can happen when they will say how to build and use the weaponry or how to launch the rockets. There is also evidence of involvement of ESP proponents in the Federal Service of Security (former KGB) to prevent terrorism in Russia.

Some of the most extraordinary stories are about so-called spin or (later) torsion fields. The leaders of this fraud, A. Akimov and G. Shipov, fifteen years ago got 500 millions rubles from the state budget for experiments with a new kind of miracle energy related to the torsion field. In 1992–1995 they got financing from the Ministry of Science, and in 1996–1997 the Ministry of Defense financed this shady enterprise. The secret of the survival for such fraudulent programs is simple. It is corruption, which has become one of the worst aspects of today's Russian society.

Another reason for the flourishing of pseudoscience is the transitional character of the society, the immaturity of Russian democracy, and the indifference of the scientific community.

Meanwhile it looks like more and more scholars are starting to realize the threat. It is symptomatic that after Kruglyakov's report all speakers talked about the real threat that false science brings to science, health care, the educational system, and society at large.

Kruglyakov's proposals to strengthen resistance to organized charlatanism were supported unanimously. As a result, the leader of the Academy, Vice-President Gennadii Mesyats, promised to create an office and increase the staff for the Committee against False Science. A regional network of representatives of that Committee also will be established. The Presidium of the Academy of Science and Mesyats particularly appreciated the role of the Russian Humanist Society and *Zdravjyi Smysl* magazine in debunking false science and promised to provide financial assistance to the journal.

—*Valerii Kuvakin*

Valerii Kuvakin is President of the Russian Humanist Society and editor of Sdravyj Smysl *(Common Sense). He is also director of the Center for Inquiry–Moscow. E-mail: v.kuvakin@humanism.ru.*

Druyan, Loftus Head CFI–West Opening Conference on the 'Assault on Reason'

Ann Druyan and Elizabeth Loftus highlighted "The Assault on Reason" one-day conference opening the new main floor auditorium at the Center for Inquiry–West in Los Angeles on June 21.

"You are the first crowd to sit in this room," said CFI–West director James Underdown in his welcoming remarks. Later this year the auditorium will be formally dedicated and named for Steve Allen. The building, at 4773 Hollywood Blvd., houses the West Coast programs of the Center for Inquiry, which includes activities of both the Council for Secular Humanism, publisher of *Free Inquiry*, and the Committee for the Scientific Investigation of Claims of the Paranormal, publisher of the SKEPTICAL INQUIRER.

Paul Kurtz, founder and chairman of both organizations, spoke of CFI's commitment "to science, reason, and free inquiry in every area of human endeavor." That commitment "is very dangerous today," he said, lamenting "disturbing changes that have occurred in the last thirty years." He sees a "radical shift" away from fundamental values championed by the founding fathers, who were heavily influenced by the Enlightenment. Kurtz said recent decades have seen marked growth in antiscientific feeling, fundamentalism, postmodernist control of academic faculties, "American triumphalism," and Islamic fundamentalism. "The naturalistic outlook has lost ground in the last two decades," Kurtz said.

Druyan, wife of the late Carl Sagan and co-author and collaborator with him on several of his seminal works, including the award-winning *Cosmos* television series, spoke movingly of Sagan's legacy and her continuing commitment to communicating the inspiring qualities of science and the overpowering sense of wonder and awe that learning about the universe can instill. She recalled "that soaring feeling that we feel when we contemplate 13 billion years of cosmic evolution and 4 billion years of life on Earth. . . . Why does the message of science not grab people in their souls and not gratify people the way religion does?" she asked. She talked of the "tragedy of separating the scientific from

Ann Druyan

Elizabeth Loftus

the sacred" and the problem of substituting faith for reality. "We should have faith in reality," she said. (The SKEPTICAL INQUIRER plans to publish excerpts from her remarks in a future issue.)

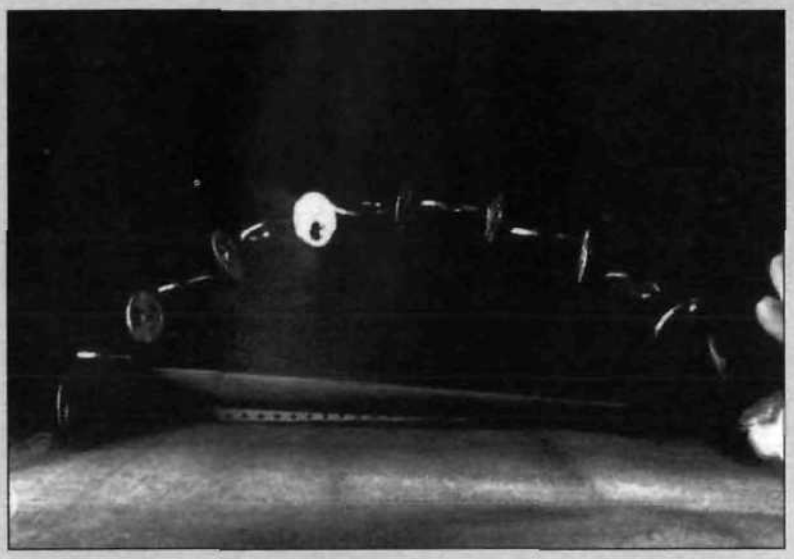
Loftus, now a professor at the University of California at Irvine, spoke on "Grand Illusions of Memory." Loftus has led pioneering research into the pitfalls of eyewitness testimony, the inaccuracies of alleged repressed memories, the ease of implanting bogus memories (she showed a scene from a forthcoming *Scientific American Frontiers* TV episode in which she and her colleagues got host Alan Alda to believe he had got sick from eating hard-boiled eggs), and the consequences of false memory, including wrongful accusations that have ruined lives. Through her groundbreaking research and investigations (and court testimony), Loftus has become embroiled in academic and legal battles over these issues. These led her recently to leave her long-time position at the University of Washington over the university's lack of support for her against her attackers.

Loftus has described some of these battles in "When Scientific Evidence is the Enemy," SKEPTICAL INQUIRER, November/December 2001, and the two-part series "Who Abused Jane Doe?" May/June and July/August 2002; see also "Memory Recovery Techniques in Psychotherapy" (co-author), in the July/August 2003 issue.

Other speakers included U.C. Berkeley paleontologist Jere Lipps on how to change the media in its treatment of science, *Free Inquiry* editor Tom Flynn, and SKEPTICAL INQUIRER editor Ken Frazier.

That evening, former *Saturday Night Live* cast member Julia Sweeney presented the first-ever show in the new theater. She gave an extraordinary 90-minute one-woman show she calls "My Beautiful Loss of Faith Story." In it she wittily and at times movingly describes her intellectual and emotional journey from heartfelt Catholicism in search of a fully satisfying religion, eventually finding science and naturalism. She says the show, which she is presenting at some Hollywood-area clubs, is a work in progress, but it resonated strongly with the theater's first-ever audience of skeptics and humanists.

—Kendrick Frazier



Ghosts in the Physics Lab

While studying the dynamics of a coin toss, Cooper Union Physics Professor Alan Wolf snapped this stroboscopic photo. Wolf was later stunned to see the unmistakable image of a ghostly hand (the amorphous white blob just left of center) grabbing the coin and briefly rotating it to face the camera. Wolf had visions of a six-figure advance on a book deal, and an early retirement to Hawaii, but then realized that he was seeing a classic rotational instability predicted by Euler's equations and a reflection of the strobe from a nearby reflective surface.

Spirited Protest

An investigation of the notorious Indiana spiritualist enclave, Camp Chesterfield ("Undercover Among the Spirits," SKEPTICAL INQUIRER, March/April 2002), stirred up a flurry of controversy, action, and reaction among spiritualists.

Disguised as "Jim Collins"—a pathetic figure whose mother had recently died—I spent several days undercover at the camp. I wanted to see whether the fake spirit activity that was exposed in the book *The Psychic Mafia* (1976) was still going on.

It was. I subsequently reported on several instances of mediumistic trickery, including versions of the old billet-reading scam. I acknowledged one medium's announcement that he was "getting the Collins family." He then revealed the fictitious names I had listed and gave me a moving message from my mother that answered a question I had written to her on the billet. I would

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have been quite moved, except that I recalled that my mother was then still among the living and, of course, was not named Mrs. Collins.

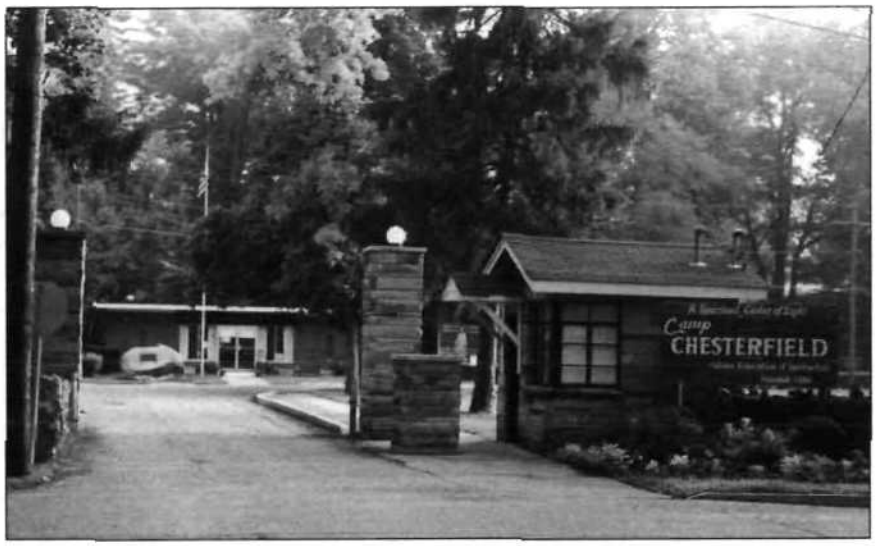
I also reported on bogus "spirit card writing" and a demonstration of alleged "direct voice" spirit-trumpet phenomena.

At the latter dark-room séance, I received an "apport," an object supposedly transported from the spirit realm. This was a steely gray specimen of the mineral hematite which, like many other stones, has a tradition of healing and additional magical influences. (My later stereomicroscopic examination showed it had the surface characteristics of tumbling—or mechanical polishing—just like other minerals commonly sold in New Age shops.)

I had thought my published exposé had been ignored, but I eventually learned that a man named Richard S. Power had taken it to heart and sent a letter to the Camp Chesterfield board. He described "an undercurrent of distrust and distaste" that had become "a growing feeling among many students and the membership." Although at first ignored, his call for "the abolishment of all spiritual activity which might bring forth any sort of appearance of fraud" eventually proved somewhat effective (see www.spiritualism.org/new_page_2.htm).

Two mediums were reportedly censured and/or "deposed." Defenders of the pair complained of the "slander" and "mistreatment" accorded them, or at least one whose "record of saving the place from financial ruin *on more than one occasion* speaks for itself."

One writer supported one of the medium's while admitting, "I cannot explain to you how or why the image of a woman, who appeared in a magazine advertisement, was exactly duplicated on one of the precipitated cards." (As a measure of that writer's credibility, he extolled the late Camp Chesterfield medium Bill English, against whom I once obtained police warrants in Lexington, Kentucky, for "theft by deception." See Joe Nickell, *Secrets of the Supernatural*, 1988.)



Entrance to the turbulent Indiana spiritualist enclave, Camp Chesterfield.

More reform may come, as some camp members are calling for a prohibition on any physical mediumship that has not been stringently verified. Such reform has already taken place at most camps, including Lily Dale in western New York, the world's largest. The reformed centers comprise the National Spiritualist Association of Churches (NSAC), while Camp Chesterfield, along with the Cassadaga Spiritualist Camp in Florida, are not part of NSAC.

"Jim Collins" (investigator Joe Nickell undercover) at Camp Chesterfield.

The trend is to avoid the old *physical* mediumship that involved such tricks as spirit rapping, slate writing, supposed "materializations," and the like, all of which had prompted numerous exposés and even arrests of those caught producing them.

Instead, today's mediums practice *mental* mediumship. This eliminates the necessity of performing in the dark, as well as the attendant risk of exposure, and permits mediums like John Edward, James Van Praagh, Silvia Browne, and Rosemary Altea to work under the bright lights of television shows like *Larry King Live*.

Such mediums rely on an old, tried-and-true technique called "cold reading," an artful method of fishing for information, dispensing general statements, and utilizing similar tricks to give the appearance that they are communicating with the dead. (See James Underdown's article "They See Dead People—Or Do They?" on page 41 of this issue.) Cold reading is a mental version of magicians' *legerdemain* and, indeed, is sometimes called "sleight of mind."

—*Joe Nickell* □

Haunted Plantation

How would you like to spend the night—alone—in the most haunted house in America? That was the question posed to me by the producers of a documentary for the Discovery Channel. I readily agreed, and was on location August 14–15, 2001. Also there to investigate (although they did not spend the night) were Jeff Reynolds and a colleague, Krista Mattson, from Ghost Tracker Investigations (a branch of North Florida Paranormal Research, Inc.), who carried in lots of nifty ghost-hunting equipment.

The Myrtles

The site was the Myrtles Plantation Bed and Breakfast in St. Francisville, Louisiana, northwest of Baton Rouge (figure 1). The antebellum estate reportedly "holds the dubious record of more ghostly phenomena per square inch than anywhere else in the country," or so claims Barbara Sillery (2001) in her credulous book, *The Haunting of Louisiana.* She labels the Myrtles "America's Most Haunted Home." Reportedly, there are apparitions, unexplained noises, a mysteriously rumpled bed, photos with "orbs" and shadowy figures, an oil portrait whose features become animated, a "bloody handprint" on the adjacent wall, doors that inexplicably open or close, and other phenomena, including fingerprints in the silvering of a mirror.

Joe Nickell is CSICOP's Senior Research Fellow and author of numerous investigative books.

The Myrtles Plantation was the home of David Bradford, a lawyer who had been the "most violent leader" of the Whiskey Rebellion in 1794. An insurrection against a tax on distilled spirits, the uprising consisted largely of western Pennsylvania and Virginia farmers, most of Scotch-Irish descent, who made whiskey from their grain. The rebellion was put down by militia under the order of President Washington, and Bradford "escaped down the Mississippi River" (Whiskey 1993).

Bradford established the Myrtles and built the plantation house in 1796 on a Spanish land grant (Spain having owned Louisiana from 1762 to 1800). According to a historical marker on the grounds, "the architecture, elaborate plaster work and lacy ironwork make this twenty room mansion one of Louisiana's most unusual planation homes." Bradford's fourteen-year-old daughter married Judge Clarke Woodruff, the subject of a "legend" relating to a purported ghost of the Myrtles that we will take up presently.

The plantation was acquired in 1834 by a jovial Scotsman, Ruffin Gray Stirling, whose family came to include nine children. Their one girl, Sarah, married a St. Louis attorney named William Winter, and the couple settled at the Myrtles. In 1871, Winter was shot and—according to legend—staggered upstairs reaching the seventeenth step before expiring. Allegedly "labored footsteps" of Winter's ghost could be heard on the stairs until they ceased in 1985 (Kermeen 2002, 9). Of course one wonders how non-physical entities like ghosts—which no longer have their physical brains and therefore would be bereft of brain functions—would be able to act and produce such noises and other physical phenomena.

'Legend' of 'Chloe'

Nevertheless, many of the alleged ghostly occurrences at the Myrtles are attributed to one of the plantation's slaves, Chloe (also spelled Cloey [Rule 2001]). According to a doubtful, garbled tale, she was Judge Woodruff's concubine. Either because she was eventually rejected for another and feared being "sent to the working fields," or because she was instead "seeking to increase her influence and power," Chloe began eavesdropping on Woodruff's private conversations. Caught at this, she was punished by having one of her ears cut off (her *left* ear, one source purported to know). As a consequence she wore a turban to conceal the defect (a *green* turban, divined one writer).

In retaliation, Chloe poisoned the birthday cake of Woodruff's nine-year-old daughter by adulterating the batter with juice from oleander leaves. Some accounts claim this was for vengeance, while others have stated that Chloe only planned to make everyone sick; she would then either nurse them until they recovered so as to win the Judge's gratitude, and/or administer a magic cure that would cause the family to regard her "as a powerful voodoo priestess" and thus return her to her former

status. However, the poisoning resulted in the deaths of Mrs. Woodruff and two of her daughters.

As a consequence, Chloe was hanged—supposedly by fellow slaves, either as retribution or out of fear of the Judge's wrath. At least one source has somehow learned that after the hanging "Chloe's body was weighted with rocks and dropped in the nearby Mississippi River."

In reality, none of the sources I have come across offers any evidence for the truth of the Chloe tale, merely attributing it—if at all—to "legend." Some sources quote the present owner of the Myrtles, Teeta Moss, or *her* apparent source, Hester Eby, who has rehearsed the story over many years. Eby has outlasted three owners, each of whom no doubt appreciated her ability to enthrall tourists with the colorful account and other spine-tingling assertions.

Figure 1. The Myrtles Plantation's picturesque—but supposedly haunted—house is nestled among trees hung with Spanish Moss.

Court archives in St. Francisville fail to substantiate the existence of "Chloe" (Frank 2001; Williams 2003). Although there are *variants* (as folklorists say) of the Chloe tale, most do not seem to be evidence of any longstanding tradition. Instead, they appear to result from the mere garbling of details by careless writers. For instance Hauck (1996), apparently following Roberts (1995), gives Chloe's name as "Cleo." (I suspect *Chloe* was spelled by someone as *Cloe*, then "corrected" by another to "Cleo.")

And Frances Kermeen, who owned the Myrtles for eight and a half years and wrote her own version of the story, either did not know the name Chloe or did not think it worth mentioning, simply referring to her as "a beautiful mulatto housemaid."

This version by the earlier owner is different in more significant respects. The slave girl is not caught *eavesdropping* but rather discovered engaging in a sexual rendezvous with Judge Woodruff—although the motif of the door being flung open, this time by the wronged wife, remains. There is no mention of a severed ear, or a green turban, or revenge, although the poisoning episode is retained, along with the denouement: "the pathetic slave was hung in the morning" (Kermeen 2002, 7–8).

Kermeen cites "a book published in 1882" that says of ghosts at the Myrtles: "The lights are never extinguished at the plantation. When the lights are all out, something always happens." Kermeen does not further identify this book (another source says it was published "in 1900"), but the salient point here is that it apparently did not mention the Chloe tale. That suggests it was probably unknown until relatively recently. In brief, the story seems not the product of folklore but of *fakelore*.

Most significantly, historians insist that Sarah Woodruff and her daughters actually died in an epidemic of yellow fever (Hamilton 1990).

Ghostly Phenomena

In any event, various ghostly goings-on have been reported—even hyped—at the Myrtles. For example, guests have heard banging noises. At one point on the "Haunted Plantation" documentary such noises were quite audible. But then the television audience learned that the pounding was being caused experimentally by Yours Truly, who was slamming a loose shutter against a drainpipe to demonstrate one possibility.

In addition to the loose shutters, mysterious noises can be caused by sundry factors, as the noted paranormal investigator, magician Milbourne Christopher (1970), observed. He noted that they were often attributable to low-hanging tree branches, drafts, children's pranks, and similar mundane causes, adding: "Woodwork affected by a change of temperature has frightened superstitious occupants of both old and new houses."

Some guests and employees have seen ghostly apparitions at the plantation, commonly while they were abed. Some were reported in a room where a little girl reportedly died in 1868, despite the ministrations of a local "voodoo queen." According to Kermeen (2002, 12), "She may appear as a shadow dancing across walls, or you may awake to find her working her voodoo on you." Actually, such a nocturnal sighting merely represents what is termed a waking dream, a common type of hallucination that occurs in the twilight between wakefulness and sleep and typically includes bizarre imagery (Nickell 1995; Nickell 2001).

For example, one guest, a writer, "swore that he awoke to find two blond-haired little girls standing at the foot of his bed" (Noonan and Scott 1995, 139).

Some apparitional experiences at the Myrtles are reported during waking activity, including one by tour guide Hester Eby (Sillery 2001). However, evidence shows that apparitions are linked to periods of reverie, typically occurring while the experiencer was in a relaxed state or performing routine work. Such a mental state may be conducive to images welling up from the subconscious and then being superimposed upon the visual scene—a sort of mental double exposure (Nickell 1995; Nickell 2001).

Numerous other phenomena are reported by superstitious staff and guests. Hyped experiences prompt still other

experiences, creating a sort of bandwagon effect. Here are my explanations for some of the most publicized of them.

The rumpled bed. One of the bedrooms in the plantation house is known as "the room of 'The Rumpled Bed.'" According to Teeta Moss, housekeeping staff are forever straightening the bed covers because "someone"—presumably the ghost of Chloe—repeatedly rumples them (Sillery 2001).

Armed with the hypothesis that the phenomenon was due to playing children, a napping staffer, frisky pet, or a household prankster, I decided to monitor the bed during my stay at the Myrtles. I constantly looked in on the room and took several photographs—even during the wee hours of the morning when I climbed out of bed and padded about the premises. Except for me the place was deserted; even the ghosts had apparently left. The supposedly haunted bed remained undisturbed.

Ghost photos. Mrs. Moss showed me some photo enlargements of the house's exterior that depicted what she and others believe is a female figure, presumably the legendary Chloe. Unfortunately the original negatives are unavailable and the enlargements have been copied from prints. Some were actually color photocopies, and one black-and-white enlargement was revealed to have a halftone-screen pattern when I examined it with a magnifier; on inquiry, I learned it had been copied from a printed postcard. Such photographic "evidence" is therefore virtually meaningless.

Nevertheless, taking the pictures at face value, the shadowy figures some perceive are, in my opinion, merely what are known as *simulacra.* That is, they are the result of the percipient's ability to see images in random patterns (e.g., foliage), like seeing pictures in clouds or inkblots.

Non-figural "ghost" images at the Myrtles are typically "orbs," the round balls of light that are often associated with haunted places and crop-circle locations. However, skeptics have shown that these effects typically result from particles of dust, water droplets, and the like reflecting the flash (Nickell 2002). Some of those appearing in the photos taken by guests and ghost hunters at the Myrtles may have been caused by tiny flying insects, reflections from glossy paint or varnish, and other mundane causes (*Haunted* 2002).

In addition to "orbs," other glitches in photos taken at the plantation, which the ghost trackers believe are caused by spirit "ectoplasm," can be caused by reflections and other common causes, including the flash rebounding from the camera strap, hair, jewelry, a finger, etc.

Figure 2. An oil portrait reportedly changes expression, and its eyes follow passersby.

Ghost-detection phenomena. In addition to still and video cameras, amateur ghostologists use various other glitch-prone equipment—such as electromagnetic field (EMF) meters—to supposedly "detect" the "energy" from "ghosts." They breathlessly report "high readings" and "significant spikes" on the EMF devices and other equipment.

Alas, these ghost buffs are invariably non-scientists who know little about what their devices are really recording and do not use scientific protocols and controls. They seem to think that if they use technological equipment they are performing science, whereas they are actually engaging in pseudoscience. None of the varied instruments they utilize is made for ghost detection, and there is no scientific evidence that ghosts exist, let alone that they yield electromagnetic radiation or have other detectable properties.

An animated portrait. Hanging on the wall in the foyer of the second floor is an oil painting of an unidentified man whose features reportedly become animated (figure 2). Teeta Moss (2001) told me she had seen its expression change from happy to sad, although she had never documented the alleged transformation. Also, she and others have reported that the man's eyes follow them as they pass by.

I monitored this painting throughout my stay at the Myrtles and took many photos. The countenance never changed, but I came to realize why some believe it does. The expression is analogous to that of Leonardo's celebrated *Mona Lisa* with its "enigmatic smile" and "ambiguity of the facial expression" ("Mona Lisa" 2003). In the Myrtles painting the gentleman's slight smile and "sad" eyes combine to give him an expression that may subjectively appear to shift.

Similarly, just as the Mona Lisa's eyes "appear to follow the viewer around the room" ("Mona Lisa" 2003), so does the gaze of the man in the Myrtles painting. In fact, as one can easily see for oneself, *any two-dimensional portrait in which the subject's eyes gaze directly at the viewer* will produce the same effect. It is the result of a three-dimensional view being "fixed" in the two-dimensional representation.

A bloody handprint. According to one source (Taylor 2000) several years ago, an infrared photograph taken of the oil portrait "revealed what seemed to be a bloody handprint on the wall next to the painting."

This reputed photo seems no longer in evidence, and Hester Eby told me she recalled it was on the painting rather than the adjacent wall. In any case, my inspection of the area with an infrared video camera (as part of my viewing and documenting the interior of the plantation house for the television crew during

my nighttime sojourn) failed to substantiate the presence of any handprint—bloody or not.

The purported rationale for the bloody handprint is also missing. While it is claimed that "strangely, four people have been murdered in that room over the years" (Taylor 2000), and "legend" says ten people were murdered on the property over time, historians insist that only one murder can be documented at the Myrtles: that of William Winter, mentioned earlier (Hamilton 1990; *Haunted* 2002).

Handprints in a mirror. There *are*, however, clearly discernible handprints in the front hallway. With its ornate, gilded frame, the mirror dominates the immediate area. Guide Hester Eby stands beside it to tell of local superstition at the time of Chloe's alleged poisoning of Mrs. Woodruff and the two girls. If the mirrors were not covered with black cloth, Eby says, it was believed that spirits of the dead could be trapped inside. "During the time of the poisoning of Sarah and her daughters, there was so much confusion that this mirror was left uncovered. It's believed those people's souls still live inside this section of the mirror" (Sillery 2001, 22).

Indeed, utilizing a lighted magnifier to examine the mirror's discolored silvering, I discovered the presence of dermal ridges and specifically identified one fingerprint as a "plain whorl" pattern (as illustrated, e.g., in Nickell and Fischer 1999, 119). However, the handprints are along the outer edges of the mirror, consistent with where the glass would have been handled by workmen. That points to the likelihood that grimy hands had affected the silvering, either before or after it was applied.

Hester Eby maintains that, while the glass looks old, it is not, and that "each time a new glass has been placed back into that frame, the handprints reappear" (Sillery 2001, 22). However, *MSNBC Investigates* (2001) states instead that the handprints returned when the mirror was "resilvered," not *replaced.*

Swinging doors. Among numerous other claims of ghostly shenanigans at the Myrtles (which seem to be reported faster than ghost-book authors can repeat them) are doors that mysteriously open and shut. During my explorations of the house I discovered that a bathroom door—which had supposedly shut on one person—was hung off-balance so that it closes by itself. Similarly, another imbalanced door swings open by itself. Among other possibilities, drafts may account for some moving doors.

Hoaxes and Hype

Not all spooky phenomena at the Myrtles has an innocent explanation, however. Consider the occurrences at a Murder Mystery Weekend on January 24, 1985—the 114th anniversary of William Winter's murder. As the actor playing Winter feigned death, the lights went out! When they came back on, guests saw that paintings in the house had become askew and some were upside down. One was even "crying," although it was supposedly out of reach to a mere prankster.

These occurrences have the earmarks of hoaxing. They are atypical and seem an especially doubtful admixture of phenomena: part "poltergeist," part mystery-drama staging, and part weeping-icon effect—the latter perhaps accomplished by someone armed with a water pistol.

Hoaxing aside, mere suggestion can prompt many people to experience ghosts, as when guide Hester Eby suggests to visitors that they might feel a spooky tap on the shoulder (*Haunted* 2002). She acknowledges, "We always get skeptics, but I really think people are interested in the ghosts and the mystery" (*Haunted* 2002). Her employer, Mrs. Moss (2001), admitted to me that she thought the "haunted thing" (the idea that the place has resident ghosts) was the "hook" to bring in business. The weathered signboard at the entrance billed the plantation house as "The Home of Mystery and Intrigue." And an advertising flyer emphasized the haunting aspect and offered, in addition to daily tours, "Mystery Tours" each Friday and Saturday evening.

Individual differences also help explain why some guests seem especially targeted by ghosts. Not only are some people more inclined to believe in ghosts, but some are more imaginative than others. In a continuing study that I am conducting regarding reported ghost encounters, I find a good correlation between the level of encounters and the number of traits associated with fantasy proneness (Nickell 2001). This held true at the Myrtles (*Haunted* 2002), once again supporting psychologist Robert A. Baker's adage, "There are no haunted places, only haunted people."

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UFOs Hot and Cold

Some places are reputed to be "UFO Hot Spots," and the San Luis Valley in south-central Colorado—called by some "the mysterious valley"—is one of them. A bustling agricultural region boasting of spectacular views of snow-capped mountains, it also claims a large number of UFO sightings. My curiosity about the place was piqued several years ago when I was talking to a reporter who, believing most UFO claims, was hectoring me for my skepticism (as most reporters who do stories on the subject seem to). He challenged me: "Since you're a skeptic, have you checked out the San Luis Valley in Colorado, where they see UFOs all the time?"

It wasn't until this past June that I finally had a chance to visit that reputedly privileged place. The center of all things extraterrestrial in that valley is of course the UFO Watchtower (although "elevated platform" would be a better description). It contains a saucer-shaped gift shop and an unimproved campground (see www.ufowatchtower.com; also, this column, May/June, 2002).

Judy is a pleasant middle-aged woman who owns and operates the UFO Watchtower. She seems to genuinely enjoy receiving visitors in her gift shop, filled with alien tchotchke. If it's alien, she has it: dolls, balloons, key chains, pens, etc. Outside, little alien figurines dot the property, pointing the way to the campground or the exit, or just carouse on old farm implements. These aliens are archaically painted green, as in the days when UFOs were objects to be sighted—the present-day aliens, whose primary occupation seems to be abducting humans, are generally acknowledged to be gray. "We discovered that there are two large vortexes in front of the dome," writes Judy in her newsletter. "Two psychics marked the centers of them for me and suggested that a rock garden be built so visitors could rest, relax, and meditate in it." The result is an extraterrestrial cactus and rock garden filled with hub caps, the remains of old satellite dishes, and miscellaneous post-industrial detritus splotched with green paint, intending no doubt to create an eerie atmosphere—with some degree of success.

Not surprisingly, the degree of paranormality in this Alien Valley seems to have been greatly exaggerated. Judy herself claims only that twenty-one sightings have occurred since the opening of her UFO Ponderosa in May 2001, an average of less than one sighting a month. Of these, she has seen fifteen herself. Most of the sightings sound like a description of lights in the sky, a characterization she agreed with. When you get out into dark skies away from city lights, there are plenty of lights in the sky that might be called UFOs by those who are so inclined. "There haven't been any landings here," she added. One female camper, says Judy, claims to have stepped outside her tent to behold a UFO that looked like a roulette wheel spinning in the sky above her. Unfortunately, she did not awaken her husband, asleep in the tent, to confirm the sighting.

The lack of photos on display in the gift shop is surprising. One would expect that any place worthy of being called a UFO Hot Spot would boast of numerous clear, unambiguous photos taken of the phenomenon by those who come hoping to see it. The lack of such photos suggests a corresponding lack of a genuine phenomenon. I noticed the same thing during my 1996 visit to some of the hottest of the UFO Hot Spots in Mexico (see chapter 21 of my book *UFO Sightings*). If UFOs really were hovering around those parts on practically a daily basis, as some claim, and given that there was no shortage of people with cameras, the fact that nobody in those areas could show you clear and convincing photos of anything unusual pretty well refutes the claims that Mexico is under siege by extraterrestrials. (Another UFO Hot Spot is reputed to be in Pine Bush, New York, near the Hudson Valley, which is also where Whitley Strieber claimed to have encountered his "visitors." It, too, is reported to be rather "cool" at present.)

Robert Sheaffer's World Wide Web page for UFOs and other skeptical subjects is at www.debunker.com.

Unfortunately, the weather did not cooperate as I entered the Mysterious Valley. Colorado weather is notoriously unpredictable, and a storm started to brew just as I approached the area. Lightning could be seen striking the ground. Later it cleared, and a modest stream of visitors came to climb the tower. By sunset it had cleared beautifully, and the night was exceptionally clear. The valley floor is extremely flat, so lights from distant farms, towns, and vehicles ring the horizon, twinkling like stars. The landscape is very quiet. The effect was indeed impressive and eerie, but unfortunately I didn't see anything in the sky that didn't belong there. But you know how reluctant paranormal phenomena are to reveal themselves when skeptics are present.

* * *

We still have no clear explanation from the Zeta about the failure of their prediction that Earth would stop rotating and flip its poles this May (this column, May/June, 2003). An update to the Web site www.zetatalk.com dated May 15—the very doomsday itself—states, "This is the last update, no further ZetaTalk anticipated." It boasted of a 68 percent success rate for seeing Planet X during April, but only for "those educated, who had done their homework and followed the imaging session, noted our words as to what to look for, and oriented themselves in the sky." Apparently other people didn't see anything. Nancy Lieder, the Zeta representative here on Earth, further informs us that MJ12, the supposedly ultra-secret crashed UFO panel, has "committed suicide to prevent itself from being misused."

But Nancy and her diehard believers still apparently cling to the belief that Planet X is nonetheless on its way. During June she posted numerous accounts of supposedly bizarre phenomena such as unexplained booms, sunspots, a ring around the Moon, and the Sun "rising and setting in the wrong place." These are labeled as "signs of the times," and are attributed to the proximity of the dangerous Planet X. Nancy insists that Earth's rotational stopping and flipping is indeed still going to occur, but she refuses to specify the hour or date. Her followers are carefully noting the times of sunrise and sunset, and the position of the Sun going down, to see if Earth's expected careening might have already begun.

We previously mentioned the low state of activity in the UFO field (this column, September/October 2002), which seems to have cooled off almost as much as Internet stocks. Indeed, things are so slow that MUFON has recently closed its headquarters in Colorado. However, the UFO field has not been totally without interesting new developments. The Web site UFO Casebook carries an account originally published by MUFON of how Cordell Hull, the Secretary of State under president Franklin Roosevelt, allegedly showed a visitor four dead aliens in glass jars in the sub-basement of the Capitol Building way back in 1939 (see www.ufocasebook.com/hull.html). A "wrecked round craft" was also said to be nearby. The source of this story is a letter from Lucile Andrew of Ashland, Ohio, who claims that her father, the Reverend Turner Hamilton Holt, a cousin of Hull, was shown these wonders, but was of course sworn to secrecy. The tendency in UFOlogy of late has been to push back the date of supposed saucer crashes well before the famous incident in Roswell in 1947.

The online news service www.ananova.com reported on May 14 that police were investigating "gnome reports in Ecuador." Several residents of the town of Quininde saw what they described as a "gnome" near the center of town. "They all described the creature as being very small, green and ugly." Marco Preciado told *Diario Extra* online: "It was less than three feet tall and I saw it three times. I tried to follow him but he disappeared." Joseph Trainor's Web site, www.UFOroundup.com, reported on May 14 that the ousted dictator Saddam Hussein's speech of May 5 may have literally been "out of this world." "According to UFO Roundup's Middle East correspondent Ayesha al-Khatabi, some residents of Baghdad claim to have heard Saddam's 15-minute broadcast over their household radio sets . . . there was some question as to whether the speech was made from the Moon or from a gigantic disk-shaped UFO orbiting Earth." If so, the capture of all of the Most Wanted Iraqi Deck of Cards will never be completed. Also in that same issue, "The U.S. government said it will seek to block the airing of a video found by Navy rescuers in Antarctica that purportedly reveals that a massive archaeological dig is underway two miles (3,200 meters) beneath the ice. . . . The Atlantis TV production crew that shot the video is still missing." The archaeologists are reportedly confirming the existence of a legendary city previously known only through the writings of the fantasy/science fiction author H.P. Lovecraft. The April 30 issue of UFO Roundup reveals how "The Russian Navy has reportedly recovered a large triangular UFO, which crashed in Kaliningrad harbor after overflying a naval base. The crash caused minor damage to a Russian destroyer." None of these bizarre stories appear to be written tongue-in-cheek—apparently no matter what kind of implausible story gets told, somebody somewhere is eager to believe it. □

We still have no clear explanation from the Zeta about the failure of their prediction that Earth would stop rotating and flip its poles this May.

When Bias is Good, When Bias is Bad

How many times have you heard it said that skeptics are biased against the possible truths of claims of the paranormal? How many times have you accused creationists of being biased against the facts supporting the theory of evolution? This often makes for endless disputes, but as we shall see, not all biases are created equal.

Bias is a natural, and useful, feature of the way humans reason about the world. A bias in this case can be thought of as the seriousness with which one regards claims in favor or against the view that one holds at the moment. In general, we tend to be biased in favor of our own views and against conflicting ones, and this asymmetry helps us navigate the world without going insane. Imagine what would happen if you changed your mind every time you heard somebody defend a different opinion from the one you hold at that moment. After awhile you would find yourself unable to make any decision.

That is probably why we evolved as biased rational animals. However, it is equally obvious that too strong a bias will also get you into trouble. If you keep refusing to believe that casino games inevitably favor the house in the long run, you will lose everything you own.

Bias is a natural, and useful, feature of the way humans reason about the world.

So what distinguishes a good from a bad bias, and how do we decide whether to stick with or change our preconceived notions? How do we know when we are being reasonably skeptical rather than closed-minded? One thing that—contrary to popular belief among skeptics—does *not* distinguish us from creationists is that we carefully consider the evidence while they simply dismiss it out of hand. Psychological research has shown that most people like to think of themselves as rational beings who give the evidence a fair shake. This is true for both skeptics and true believers. A classic example will illustrate the point.

A study discussed in Thomas Gilovich's *How We Know What Isn't So* (pp. 53–54) reports the results of a test of bias in which two groups of people were given literature containing data supporting and criticizing the effectiveness of the death penalty. When one compares data on the same state before and after capital punishment was introduced (within a certain historical period), it turns out that the frequency of homicides does go down significantly. This can reasonably be interpreted as evidence in favor of the deterrence effect. However, if one compares the same statistic (the rate of homicides) between states that have and do not have the death penalty, there is no significant difference, a result that just as clearly contradicts the deterrence hypothesis.

Predictably, the evidence did not sway opinions: proponents of the death penalty thought their conviction was bolstered by the data, and so did those who had declared opposition to capital punishment before examining the evidence. What was interesting was the reason why these predictable results obtained. It was not that subjects discarded

Massimo Pigliucci is professor of ecology & evolutionary biology at the University of Tennessee and author of Denying Evolution: Creationism, Scientism and the Nature of Science. *His essays can be found at www.rationallyspeaking.org.*

the contrary evidence. Quite the opposite: they examined it more carefully than the evidence that favored their own views. As a result of this closer scrutiny, they were able to uncover (very reasonable) flaws in the study that did not fit with their bias, leaving the exercise convinced that they had thoroughly dismantled the opposite view. This sounds a lot like the sort of arguments I get from creationists: they read quite a bit of evolutionary literature, and they are convinced that it is reasonable to reject what scientists propose on the basis of the evidence itself. Of course, they do not pore over their Bibles with anything like the same sort of critical spirit they employ when reading articles written by evolutionary biologists.

Scientists, incidentally, show the same sort of bias. Gilovich's example is the one of French anatomist Paul Broca (1824–1880), who refused to believe that the German brain cases he was studying were significantly larger than the French ones in his sample. He thus appropriately corrected for body size, which resulted in the difference evaporating. However, Broca somehow neglected to apply the same correction in the much more obvious instance of the difference in brain size between men and women, concluding that women were less intelligent!

In general, we tend to be biased in favor of our own views and against conflicting ones, and this asymmetry helps us navigate the world.

The crucial point, of course, is that scientists no longer believe Broca's ideas about gender differences in intelligence, while creationists still refuse to accept the overwhelming evidence in favor of evolution. Why? Peter Medawar explained it this way: Science is "a rapid reciprocation of guesswork and checkwork, proposal and disposal, conjecture and refutation." It is not that individual scientists are any less biased than any other person, or even that bias is inherently bad; rather, it is that the social activity of science as a community of people committed to the free market of ideas leads to a better understanding of the world. Creationists and pseudoscientists share no such commitment, and that is why they may end up rationally convinced that their conclusions are well founded, despite all evidence to the contrary.

Further Reading

T. Gilovich. 1991. *How We Know What Isn't So*, Free Press, New York. □

The Lost Messiah

Secrets on Psychical Research Emerge from a Stack of Forgotten Documents

A strange and bizarre story emerged recently when some private documents were opened to the public a few years ago. However, as odd as this story will sound, even stranger is the fact that nobody has since talked publicly about it and you are very likely the first ones to read about it.

It all started when former secretary and president of the Society of Psychical Research (SPR), William Henry Salter, died in 1969 and it became known that he had left two sealed trunks of documents in the custody of Trinity College, at Cambridge. The trunks, containing letters, memoirs, and transcripts of séances, were to remain unopened until 1995.

When the time came, nobody, not even officials of the SPR, seemed to pay much attention to the bequest. I know only of one person who was biting his nails, waiting for 1995 to arrive: friend and historian Gian Marco Rinaldi. He requested information from the Trinity College Library and they sent him a detailed catalogue of the 140 items included in Salter's deposit.

The Forgotten Cross Correspondences

It turned out that the deposit included privately printed books with complete transcripts of séances held in the early 1900s with a group of mediums sometimes known as the Verrall's group. This group, which included friends of the original founders of the SPR, claimed to receive automatic writing messages from departed souls such as Frederic W.H. Myers, Edmund Gurney, and Henry Sidgwick.

The group (named after Margaret Verrall, the first medium to say that Myers had communicated to her from the hereafter), was involved in a largely forgotten experiment called Cross Correspondences. The idea was that the dead founders of the SPR were best suited to devise an experiment that would undoubtedly prove the reality of survival after death. The various mediums of the Verrall's group (Mrs. Verrall, her daughter Helen, Mrs. Holland, Mrs. Forbes, Mrs. Willett, Mrs. King, Mrs. Piper, and the Macs' family) thought they were independently receiving messages from the same entities.

Proof that such messages were from the same spirits could be deduced by cross references that could be found inside the various, independent messages. Usually these references were not clear and direct, but needed to be deciphered and put together like in a puzzle. Obviously this procedure opened the experiment to serious criticism; however, many at the SPR believed that absolute proof in support of survival after death had been obtained.

Since Cross Correspondences have long ago been abandoned by psychic researchers and no longer studied, one might wonder what Salter had put in his papers, what was so important that it had to remain secret for ninety years after the end of the original experiments.

The catalogue obtained by Rinaldi specified that in the deposit there were 6,438 pages of séance transcripts and analysis of such transcripts; 4,446 printed pages of further analysis and comments; a few other thousands pages of manuscripts, diaries, notes, indexes and letters all related to the Cross Correspondences experiments and the manuscript of Salter's *Reminiscences of the Society for Psychical Research*, written in 1955/56.

It was quite a lot of material to go through, even for the most dedicated historian. However, this is exactly what Rinaldi set up to do, requesting time and again copies of material from Trinity College.

Reminiscences of Psychical Research

There are no big revelations in Salter's *Reminiscences*, only some stories, mainly of a private nature, that today are mere curiosities, interesting probably only to students of the history of psychical research. For example, the puritan nature of the early SPR is discussed. Eric J. Dingwall, one of the great investigators of the past, in order to be named

Massimo Polidoro's latest book is titled Secrets of the Psychics: Investigating Paranormal Claims.

Research Officer, was induced to marry the woman with whom he was living. Having done this, he was nonetheless soon fired from his job at the Society when he published some anthropological work on ancient erotica, considered by some Council members as obscene.

Another investigator, Theodore Besterman, was traveling the Americas in 1936 on behalf of the Society in order to meet psychics (such as Brazilian medium Carlos Mirabelli), and to visit J.B. Rhine's parapsychological laboratory in Durham, North Carolina. Along the way, he met an American widow and fell in love with her. Besterman, however, had a wife in England and he simply wrote a goodbye letter to her. Again, the Council of the SPR considered this an offense to the Society and fired him, losing one of their best investigators.

There are also stories of secret affairs, some of a homosexual nature, and sad episodes of alcoholism and drug abuse which are best left forgotten.

Salter's comments on some famous mediums of the time are revealing: he considered Margery a fraud and details an episode in which she and her husband, Dr. Le Roi Crandon, were caught in trickery at a 1929 séance in an SPR room. He also hints at the fact that Dingwall had quite a soft spot for Margery. "On one of his visits to America," writes Salter, "Dingwall had thyroid trouble which Crandon successfully treated, and out of gratitude for that and even more because he had fallen for Margery, he defended her through thick and thin until the Dudley exposure, which he could not explain away."

Regarding medium Eva C., famous for her materializations, he thought she was "fat, vulgar, stupid, with a slight squint, and a conviction that every man fell in love with her on the spot."

Salter commented more kindly on Polish medium Stanislawa (Stasha) Tomczyk (who specialized in the "levitation of small objects"), saying she was "highly ranked" in SPR circles. There is a curious incident here. When Stasha was in a trance there emerged a personality, "Moyenne," with the mentality and manner of "a very attractive child of about thirteen." Everard Feilding, then Honorary Secretary of the SPR, spent a lot of time with Stasha—and Moyenne. To Stasha he behaved with friendly decorum, but with Moyenne he "flirted outrageously." Stasha fell in love with Feilding, who however did not feel for her what he felt for her other personality; realizing his ungentlemanly conduct, he subsequently thought the proper course was to marry Stasha, though he was the son of a Lord and she "just an immigrant." The marriage proved successful.

The "spirits" had communicated through Mrs. Willett that they had devised a plan to bring a "New World Order" on earth.

The Trouble With Henry

It was in a second bundle of photocopies he received, however, that Rinaldi found something far more interesting. It appears that one of the main reasons for not divulging the content of the documents was to avoid any risk of compromising "the Plan."

The Plan? What Plan? Well, Salter had hinted to it here and there in his published writings, but had never explained it properly. It turns out that the "spirits" of Myers, Gurney, and Sidgwick had communicated through Mrs. Willett (a pseudonym for Winifred Margaret Coombe-Tennant) that they had devised a plan to bring a "New World Order" on earth. A Messiah would have been born and he would have brought peace and justice to the world.

In one of the papers from Salter's deposit it is said that the spirits "asked Mrs. Willett to bear another child." The woman had no desire or intention of this kind, but after further requests of the spirits she agreed. The spirits were quite happy with the decision and "maintained that the event had long been planned, planned in the highest quarters, to an extent which it was difficult to exaggerate, and that the child would possess a remarkable personality—a genius, in fact, of high order—and would prove to be the greatest of his psychic works, to which all else had been leading up."

Nobody in the SPR had ever said anything about this for fear of interfering with the plan, and when the last of the researchers of this group died in 1952, only Salter remained. That's why he decided to deposit the documents at Trinity College and give thirty more years for the New World Order to develop. After that, he probably thought, there was no reason for the documents to stay secret any longer, both in the case of success or failure of the Plan.

The scheme of the entities was to give the Messiah birth through some sort of "psychical genetics": the spirit of Francis Balfour, who in his life had been a biologist, was to act as a supervisor for the event. The new Messiah was destined to become what Augustus had been for the Roman Empire.

The identity of this Messiah hasn't been publicly unveiled until now: it was the last son of Mrs. Willett, born in 1913, who was given the same name of the emperor he was hopefully going to become: Augustus. His complete name was then Augustus Henry Serocold Coombe-Tennant, but in his adult life he always referred to himself as Henry.

He studied at Cambridge and then entered the military and went to war. He was captured by the Nazis and imprisoned in a German camp. After the end of the war he entered the Secret Service and worked mainly in the Middle East. After the death of his mother in 1956 he was probably informed of his expected role and entered a spiritual crisis. He thus asked the Secret Service to send him to Holland, were he lived for a couple of years and then decided to become a Roman Catholic and was ordained a Benedictine monk. In 1971 he wrote a brief note on the death of professor C. D. Broad, a parapsychologist and one of his teachers at Cambridge, in the *Journal of the Society for Psychical Research*. After this date, nothing more was known of Henry for a long time.

The fact that Henry did not publicly manifest the "remarkable personality" and genius that the spirits had planned for him did not worry the SPR group. In 1956 Salter was a bit troubled by the delay and wrote: "If Henry is really going to inaugurate a new Golden Age... the sooner he gets going on the better!" However a few years later, in 1964, when Henry had already retired as a monk in a monastery, Salter still thought that the prophecy could become true and wrote that the progress of the Plan "should be given a fair chance."

It would certainly have been interesting to discuss with Henry about the whole Messiah story and to hear what he thought about it. Rinaldi recently found that the Benedictine monastery where Henry had retired was that of Downside, Stratton-on-the-Fosse, Bath County. Remembering that Susan Blackmore lived nearby, I gave her their phone number, hoping that he was still alive. However, when she called she was told that Henry had died in 1989.

The new Messiah was lost forever.

Acknowledgments

I wish to thank Gian Marco Rinaldi for his kind assistance and for providing me with copies of the documents obtained from Trinity College. □

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THE COMMITTEE FOR THE SCIENTIFIC INVESTIGATION OF CLAIMS OF THE PARANORMAL

The Ongoing Problem with the National Center for Complementary and Alternative Medicine

In spite of statements to the contrary by its director, the NCCAM continues to fund and promote pseudoscience. Political pressures and the Center's charter would seem to make this inevitable. Ethics and the public interest are compromised.

KIMBALL C. ATWOOD IV, M.D.

The National Center for Complementary and Alternative Medicine (NCCAM) was established in 1998, seven years after the creation of its predecessor, the Office of Alternative Medicine (OAM). The OAM had been formed not because of any medical or scientific need, but because Iowa senator Tom Harkin and former Iowa representative Berkeley Bedell believed in implausible health claims as a result of their own experiences. Bedell thought that "Naessens Serum" had cured his prostate cancer and that cow colostrum had cured his Lyme disease (Jarvis 1996). He recommended "alternative medicine" to his friend Harkin, who subsequently came to believe that bee pollen had cured his hay fever (Marshall 1994).

Political wrangling, but little science, marked the history of the organization throughout the 1990s (Gorski 2001). Although the OAM was officially a part of the National Institutes of Health (NIH), it was managed more by "Harkinites" than by scientists (Marshall 1994; Satel and Taranto 1996). *Science* magazine recounted a 1993 congressional hearing held by Harkin, with Bedell as a witness:

> NIH, Bedell said, should hire staffers to locate anyone who claims to have a successful therapy, search the files, and "just simply find out whether what he claims is correct."
>
> [Subsequent to the hearing] Bedell brushed aside questions about how his field studies could be designed to avoid bias. This is a technical detail, Bedell said, and "I'm not a scientist." But he insisted at the hearing—and still insists—that field studies can be done quickly and easily, without fancy statistics or double-blinded controls (Marshall 1994).

Political wrangling, but little science, marked the history of the organization throughout the 1990s. Although the OAM was officially a part of the National Institutes of Health (NIH), it was managed more by politicians than by scientists.

The creation of the NCCAM as an "NIH Center" in 1998, followed by the appointment of Stephen Straus as its director in 1999, marked a noticeable change. Straus is the first director of the OAM/NCCAM to have legitimate qualifications as a biomedical scientist. He promised "to explore CAM healing practices in the context of rigorous science, to educate and train CAM researchers and to disseminate authoritative information about CAM to the public" (Straus 1999). Three years later he felt confident enough to tell *The Scientist*, regarding scientific opinions of the NCCAM, "I think there's very little skepticism left" (Russo and Maher 2002).

This article argues that in spite of Dr. Straus's convictions, the NCCAM continues to be committed more to pseudoscience and CAM advocacy than to rigorous science.

Pointless Research and Dangerous Promotions

Director Straus, referring to NCCAM-sponsored research, recently wrote, "Some people believe that any such undertaking is a pointless exercise" (Straus 2002). That is correct, and some of the reasons for this were evident in his short article. He noted that the herbal mixture PC-SPES was recently found to be adulterated by prescription drugs. He did not mention that when this adulteration was discovered, the NCCAM had been sponsoring four studies of PC-SPES. The studies had been justified by preliminary data suggesting that PC-SPES may be effective for the treatment of prostate cancer. That effect, however, has now been explained by the presence of diethylstilbestrol and indomethacin (Sovak et al. 2002). Nevertheless, after a brief pause the NCCAM intends to resume three of the studies "because of the promising data from the early studies of PC SPES" (NCCAM Web site 2002a).

Straus warned of "some herbal medicines . . . that interfere with the metabolism of drugs used to treat cancer or AIDS" (Straus 2002). By this he meant, mainly, St. John's wort. But St. John's wort has for years been recommended as a treatment for the HIV by the naturopathic Bastyr University AIDS Research Center, funded by the OAM/NCCAM since 1994 (BUARC Web site 2002). The Bastyr Web site does not mention the danger of mixing St. John's wort with HIV protease inhibitors, although that fact had been known since 2000 (Piscitelli et al. 2000). How many people carrying the HIV may have developed AIDS or relapses because of such promotion is a mystery, but there is no indication that anyone at Bastyr or the NCCAM is wondering.

The director of the Bastyr University AIDS Research Center is naturopath Leanna Standish. She was a member of the NCCAM advisory council from 1999–2001. She is the Principal Investigator of an NCCAM-sponsored clinical trial to study "Garlic in hyperlipidemia caused by HAART [highly active anti-retroviral therapy]." But garlic is another substance that reduces blood levels of lifesaving HAART agents (Piscitelli et al. 2002), a fact that is mentioned in neither the NCCAM nor the Bastyr descriptions of the trial.

Standish is the lead author of a chapter in the major textbook of naturopathy that recommends more than 100 "therapeutic suggestions" for HIV infection and its complications (Standish et al. 1999). The authors state that these treatments constitute "comprehensive care that is concordant with several naturopathic principles" and that the program is being studied "through a three-year cooperative agreement grant with the NIH's Office of Alternative Medicine" (now the NCCAM). In addition to St. John's wort and garlic, some of the recommended treatments are "acupuncture detoxification auricular program," whole-body hyperthermia, "adrenal glandular," homeopathy, "cranioelectrical stimulation," digestive enzymes, and colloidal silver, a toxic heavy metal that the FDA has declared useless for any medicinal purpose.

The authors offer numerous references to support the use of these methods, but all are inadequate or irrelevant. The citation for colloidal silver, for example, is a report of its use as a preservative. The authors admit, near the end of their twenty-page chapter, that proof of their assertions is lacking. Nevertheless, on the first page they have promised that the program "should guide the physician is assisting patients in

Dr. Atwood is an anesthesiologist at the Newton-Wellesley Hospital in Newton, Massachusetts. He is Assistant Clinical Professor at the Tufts University School of Medicine and Contributing Editor of the Scientific Review of Alternative Medicine. *E-mail: katwood@partners.org.*

optimizing their health, slowing disease progression, improving quality of life, and possibly improving immune function."

Implausible Claims and Unacknowledged Scientific Fraud

According to the Bastyr Web site, the NCCAM also sponsors a study of "Distant Healing Therapy in HIV/AIDS." Investigators include Standish and the late Elisabeth Targ, previously the subject of a SKEPTICAL INQUIRER column by Martin Gardner (March/April 2001). "Distant Healing" in this case means that anonymous people pray, from a distance, for patients who are unaware of it. The study is to "extend preliminary work," by which is meant Targ's 1998 study, famous in CAM circles (Sicher et al. 1998). The NCCAM also funds another of Targ's distant healing studies, presumably also justified by her 1998 study. That study, however, has now been revealed as a scientific fraud (Bronson 2002). At the time of this writing neither the Bastyr Web site nor the NCCAM has acknowledged this, and the NCCAM apparently has no plans to discontinue the now-baseless current studies.

Another of Standish's studies, sponsored by the NCCAM, is "Transfer of Neural Energy." It proposes to find "that visually evoked potentials generated in one human brain (Subject A) by photostimulation can generate a correlated EEG signal in the brain of another human subject (Subject B) who is located at a distance (14.5 meters) and is not visually stimulated" (BURP 2003). In other words, it hypothesizes the recurrent paranormal claims of thought transmission and "remote viewing," both of which are implausible and never demonstrated despite thousands of attempts (Kurtz 1985).

Standish was an original member of the recently formed Institute of Medicine (IOM) panel on "Use of Complementary and Alternative Medicine by the American Public," sponsored by a $1 million grant from the NCCAM (IOM Web site 2003). This panel will not consider the validity of CAM claims, but seems intended to provide justification for the NCCAM's continued existence.

Research Centers, More Implausible Claims, and "Integrative Medicine" Centers

The NCCAM funds several "research centers," among which is Bastyr University. Another is the Center for Frontier Medicine in Biofield Science. "Biofield," according to an OAM publication, is defined as "'a massless field' that: (a) is not necessarily electromagnetic, (b) surrounds and permeates living bodies, (c) affects the body, and (d) possibly is related to *qi*" (Raso 1997). According to the NCCAM Web site, "This Center facilitates and integrates research on the effects of low energy fields. The research is focused on developing standardized bioassays (cellular biology) and psychophysiological and biophysical markers of biofield effects, and on the application of the markers developed to measure outcomes in the recovery of surgical patients."

The NCCAM funds Elisabeth Targ's distant healing studies, presumably justified by her 1998 study. That study, however, has now been revealed as a scientific fraud.

The center's Principal Investigator is psychologist Gary Schwartz, a colleague of alternative medicine guru Andrew Weil at the University of Arizona. Schwartz has published a book in which he claims to have shown scientifically that "consciousness continues after death" and that mediums,

Gerald Fried

including John Edward, can communicate with the dead (Schwartz 2002). A recent SI critique of Schwartz's methods found them to be flawed in the most elementary of ways, such that no competent scientist could take his conclusions seriously (Hyman 2003).

Another NCCAM-sponsored research center will study "the effect of Therapeutic Touch on bone metabolism and on fibroblast biology, . . . on bone metabolism in postmenopausal women with wrist fractures and . . . the effect of healing touch on immune function in advanced cervical cancer" (NCCAM Web site 2002b). Therapeutic Touch consists of the waving of hands several inches from a patient. Its putative basis is a manipulable "human energy field" that can be detected by practitioners but not by any scientific instrument (Atwood 2002b). In experiments, however, Therapeutic Touch practitioners have failed to detect the "energy field" when denied visual cues (Rosa et al. 1998).

Much of the research agenda of the NCCAM is either so implausible as to not warrant spending public monies or has already been disproved in other settings.

Much of the rest of the research agenda of the NCCAM, such as "cranial osteopathy" for otitis media, "In Vitro Investigation of Distant *Qi Gong*," "Gonzalez Therapy" for cancer of the pancreas (coffee enemas, pancreatic enzymes, hundreds of daily "dietary supplement" pills, and hair analyses), magnets for various purposes, acupuncture for diarrhea in HIV patients, and oral shark cartilage for cancer, is either so implausible as to not warrant spending public monies or has already been disproved in other settings. Some trials appear to employ more than one method in the same study group, ensuring that even if an effect exists there will be no way to tell what caused it (NCCAM Web site 2003).

A few of the trials and research centers seem, on their face, to be legitimate. Examples of these are the Glucosamine/Chondroitin Arthritis Intervention Trial and the NCCAM's own Division of Intramural Research.

Several grants go to medical schools for the purpose of establishing "integrative medicine" centers, which begs the question of why this should be done in the absence of evidence that "integrative medicine" works.

Cynicism and Fear

Some academic physicians view the NCCAM cynically, as simply another opportunity to get scarce grant money (CAM Director 2001). Straus himself acknowledged this in a recent interview: "people at major universities . . . become stunned thinking that we should be an easy take" (Russo and Maher 2002). Some in academic medicine are undoubtedly afraid that criticism of the NCCAM might displease Sen. Harkin who, as Chairman and/or Ranking Member of the Labor, Health and Human Services, and Education Appropriations Subcommittee, can influence the budget of the entire NIH. This could explain why, according to Straus, "our sister institutes have picked up" several grant proposals that the NCCAM was unable to fund (Russo and Maher 2002).

Straus opined that this must mean that the proposals weren't "crap," but that is not the only possible explanation. A companion piece to this article shows, in the case of Rep. Dan Burton and the National Heart, Lung, and Blood Institute, how a powerful ideologue can dictate the research agenda of an NIH affiliate (Atwood 2003). There are also precedents for Sen. Harkin using his position to wrestle control of medical research away from scientists. In 1994, according to the National Council Against Health Fraud, resigning OAM Director Joseph Jacobs "complained that Sen. Harkin was holding the entire NIH budget hostage" until Jacobs placed three of Harkin's choices, among them Berkeley Bedell, on the OAM advisory panel (NCAHF 1994). At the 1993 hearing reported by *Science*, "Bedell . . . complained that the NCI wasn't moving fast enough to validate antineoplaston therapy. Harkin responded that he would 'get their attention real fast. I have been around here eighteen years, and I have figured out how to use the purse strings'" (Marshall 1994).

All of this has resulted in the establishment of a cadre of academics who have come to rely on NCCAM funds or who otherwise defend the NCCAM's existence, with little regard for the scientific issues raised here. Thus many physicians who have not taken the time to consider CAM (and many members of the public) are led to believe that CAM claims are likely to be valid and that the NCCAM project is a noble one.

Human Studies Ethics and CAM

Clinical trials of CAM methods pose particular ethical problems. Drawing from the primary ethics literature of the past fifty years, Ezekiel Emanuel and colleagues have proposed seven universal criteria for determining if a human study is ethical: value, scientific validity, fair subject selection, favorable risk-benefit ratio, independent review by unaffiliated individuals, informed consent, and respect for enrolled subjects (Emanuel et al. 2000). All criteria must be met in order to make such research ethical.

Highly implausible or impossible methods, such as homeopathy, craniosacral therapy, "psychic (distant) healing," Therapeutic Touch, EDTA chelation for atherosclerosis, the

chiropractic "subluxation theory" and many other CAM claims are what Emanuel and colleagues refer to as "trifling hypotheses." Human studies of such methods are, a priori, unethical, quite apart from any political impetus to conduct them. This is both because of the exploitation of subjects for questions that lack "scientific or clinical value" and because such research is a waste of resources: "Comparing relative value is integral to determinations of funding priorities when allocating limited funds among alternative research proposals" (Emanuel et al. 2000). In particular, one might add, if those funds are public. Thus the current federal allocation of $110 million per year for the NCCAM might be weighed against the $5 million per year allocated for research on spinal muscular atrophy, a devastating childhood disease that some scientists believe would be on the verge of a therapeutic breakthrough but for want of adequate funding (Cohen 2002).

These ethical arguments are not refuted by the contention that a significant fraction of the population may wish such studies to be done, or even by the argument that demonstrating such methods ineffective will benefit society. These are the usual arguments favoring the existence of the NCCAM and CAM research programs in academic medicine, and are often made even by skeptics. But such contentions are irrelevant to the ethical issues and as such are expressly discouraged, as a basis for the Institutional Review Board (IRB) approval of NIH-sponsored study proposals, by the Code of Federal Regulations (CFR 2001): "The IRB should not consider possible long-range effects of applying knowledge gained in the research (for example, the possible effects of the research on public policy) as among those research risks that fall within the purview of its responsibility" (CFR §46.111).

Nor does the virtual certainty that some subjects would use an implausible therapy, even in the absence of a clinical trial, render such a trial ethical: "the IRB should consider only those risks and benefits that may result from the research" (as distinguished from risks and benefits of therapies subjects would receive even if not participating in the research) (CFR §46.116).

Plausibility also figures in informed consent language and subject selection. How many subjects who are not wedded to "alternative medicine" would be likely to join a study that independent reviewers rate as unlikely to yield any useful results, or in which the risks are stated to outweigh the potential benefits? Are informed consents for such studies honest? In at least one case cited in the following paragraph, the answer is "no." Nor may subjects who prefer "alternative" methods be preferentially chosen for such research even if they seek this, because "fair subject selection requires that the scientific goals of the study, not vulnerability, privilege, or other factors unrelated to the purposes of the research, be the primary basis for determining the groups and individuals that will be recruited and enrolled" (Emanuel et al. 2000).

The Office for Human Research Protections recently cited Columbia University for failure to describe serious risks on the consent form of its "Gonzalez" protocol for cancer of the pancreas, funded by the NCCAM (OHRP 2002). The study proposes to compare the arduous "Gonzalez" method, which is devoid of biological rationale, to gemcitabine, an agent acknowledged by the investigators to effect "a slight prolongation of life and a significant improvement in . . . quality of life." Nevertheless, a letter from Columbia to prospective subjects states, "it is not known at the present time which treatment approach is best [*sic*] overall" (Chabot 1999). The claim of clinical equipoise, or uncertainty in the expert medical community over which treatment is superior—necessary to render a comparison trial ethical—is not supported by the facts (Freedman 1987).

Human studies of such methods are, a priori, unethical, quite apart from any political impetus to conduct them. This is both because of the exploitation of subjects for questions that lack "scientific or clinical value" and because such research is a waste of resources.

The proposed Trial to Assess Chelation Therapy in CAD will likely violate several ethical requirements, including lack of scientific validity, lack of value, biased subject selection, and unfavorable risk-benefit ratio. It will be unlikely to recruit subjects—other than those already predisposed to such treatment—unless it presents dishonest consent information (Atwood 2003).

Advisory Councils

There are two councils charged with advising the director of the NCCAM on matters related to research funding and clinical trials: the National Advisory Council for Complementary and Alternative Medicine (NACCAM) and the Cancer Advisory Panel for Complementary and Alternative Medicine (CAPCAM). It might be expected that the membership of these councils reflects the Center's professed commitment to the rigorous, skeptical inquiry of "complementary and alternative" methods. The director, however, has no formal role in

selecting the council members. The members of the NACCAM are appointed by the Secretary for Health and Human Services, with these stipulations: "Of the eighteen appointed members, twelve shall be selected from among the leading representatives . . . of the health and scientific disciplines in the area of complementary and alternative medicine. Nine of the twelve shall include practitioners licensed in one or more of the major systems with which the Center is involved" (NCCAM Charter 2000). The members of the CAPCAM are appointed by the director of the NIH, but with the requirement that "of the fifteen members, eleven shall be nonfederal," including the Chair, and "nonfederal members will be selected based on their knowledge and expertise in the fields of complementary and alternative therapeutic cancer treatments" (CAPCAM Charter 2002).

Thus it can be predicted that the councils will be biased, *prima facie*, in favor of the very methods that the Center is charged to submit to skeptical scrutiny. An examination of the rosters of the two councils supports this prediction. Among the NACCAM members in the past three years were Standish and two other naturopaths. In 2000 one of them, Anna MacIntosh, recommended "Gerson Therapy" for cancer and multiple sclerosis (NCNM Web site 2000). This is a regimen of "detoxification" with coffee enemas and a diet including huge quantities of juices made from fruits, vegetables, and raw calf's liver. The National Cancer Institute had evaluated Gerson's claims in 1947 and again in 1959, and found them to be baseless (Barrett and Herbert 2001).

The third naturopath on the NACCAM is Konrad Kail, who explains "patient-centered care" this way: "If I see a patient who has pain in his arms because his neck is out of alignment, I explain to them that we can do spinal adjustments, acupuncture, homeopathy, or we can do all three. Then I wait for their [*sic*] choice" (Morton and Morton 1997).

Another recent member of the NACCAM is Marilyn J. Schlitz, reported by skeptic Dr. Tim Gorski to be "an astral voyager 'remote viewer' who was praised by Russell Targ for having 'achieved the greatest statistical significance of any remote-viewing experiment so far conducted' in exploring tourist sites in Rome from her home in Detroit, Michigan" (Gorski 2001). Schlitz is a co-investigator with Standish in the aforementioned "transfer of neural energy" study.

On the CAPCAM still sits Ralph Moss, one of the original "Harkinites." His *Cancer Chronicles* newsletter has suggested that homeopathy and other implausible treatments can cure cancer (Moss 1995). He has also accused the Mayo clinic of being "fraudulent" (Moss 1993) because of its study that demonstrated the ineffectiveness of laetrile (Moertel et al. 1982). This exposes the fallacy of the social usefulness of studies that disprove sectarian methods.

In considering the rosters of the two councils, one is reminded of physicist Robert Park's account of a 1995 Senate press conference announcing the release of *Alternative Medicine: Expanding Medical Horizons*, the report of a workshop sponsored by the Office of Alternative Medicine (OAM workshop 1992). The press conference was hosted by Sen. Harkin. According to Park (2000):

> Perhaps the strangest part of the press conference consisted of brief statements by individual members of the editorial review board of what they saw as the most important issues for the Office of Alternative Medicine. One insisted that the number-one health problem in the United States is magnesium deficiency; another was convinced that the expanded use of acupuncture could revolutionize medicine; and so it went around the table, with each touting his or her preferred therapy. But there was no sense of conflict or rivalry. As each spoke, the others would nod in agreement. The purpose of the OAM, I began to realize, was to demonstrate that these disparate therapies all work. It was my first glimpse of what holds alternative medicine together: there is no internal dissent in a community that feels itself besieged from the outside.

Conflicts of Interest

Many NCCAM grant recipients have conflicts of interest regarding the Center. Several grant recipients are or have been members of the NCCAM Advisory Council or the Cancer Advisory Panel. Several members of the "Expert Panel to Assess NCCAM Research Centers," including the Chairman, are either grant recipients or are affiliated with institutions that receive NCCAM grants (Expert Panel 2002). Several members of the recently formed IOM panel on "Use of Complementary and Alternative Medicine by the American Public," itself sponsored by the NCCAM, are recipients of NCCAM grants (IOM Web site 2003). No member of that panel has demonstrated expertise in the rigorous evaluation of CAM methods.

Conclusion

Straus has written that the NCCAM "was created to foster and build a research enterprise that subjects complementary and alternative medicine to open-minded, hypothesis-driven investigation" (Straus 2002). That is inaccurate. The NCCAM was created by a few advocates who believed in implausible or disproved health claims, including laetrile, and who felt that the scientific "establishment" was unfairly suppressing them (Gorski 2001; Atwood 2002a; Sampson 2002). As such, the Center's role has been more one of advocacy than of science. Calls for its abolition have been reasoned and comprehensive (Stalker 1995; Science 1997; Halperin 1998; Sampson 2002).

After more than ten years and $200 million, OAM/NCCAM-sponsored research has not demonstrated efficacy for any CAM method, nor has the Center informed the public that any method is useless (Green 2001). It continues to fund and promote pseudoscience. It continues to be influenced by powerful ideologues.

The problem with so-called Complementary and Alternative Medicine, in a nutshell, is that it is an assortment of implausible, dishonest, expensive, and sometimes dangerous claims that are exuberantly promoted to a scientifically naïve public. The NCCAM, so far, has not been part of the solution.

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What Does Education *Really* Do?

Educational Dimensions and Pseudoscience Support in the American General Public, 1979–2001

A study using national survey data over twenty-three years and examining four pseudoscience topics untangles some seeming conundrums about the relationship between education levels and belief in pseudoscience. It identifies more precisely just which aspects of education influence pseudoscience beliefs.

SUSAN CAROL LOSH, CHRISTOPHER M. TAVANI, ROSE NJOROGE, RYAN WILKE, and MICHAEL McAULEY

In Great Falls, Montana, Libertarian Senate candidate Stan Jones turned blue from drinking a silver solution that he believed would protect him from disease. In 1999, Jones, a 63-year-old business consultant and part-time college instructor, began drinking colloidal silver because he feared that millennium disruptions might create an antibiotics shortage.

Adapted from the Associated Press, October 2, 2002: "Candidate's Skin Blue After Drink!"

SKEPTICAL INQUIRER readers need no introduction to the perils of pseudoscience. Here, we define pseudoscience beliefs as cognitions about material phenomena that claim to be "science," yet use nonscientific evidentiary processes. Rather than control groups or hypothesis testing, pseudoscience practitioners employ authoritative assertion (such as scripture), anecdote (ersatz "cures"), compelling

stories (alien abduction), or unelaborated "natural" causes (planet positions). Although following one's horoscope or using lucky numbers to choose a lottery ticket can be fun, pseudoscience is also rife with ineffective or hazardous untested "cures," costly psychic hotlines, or a fatalistic reliance on luck. Thus, factors promoting support or rejection of pseudoscience have received serious study.

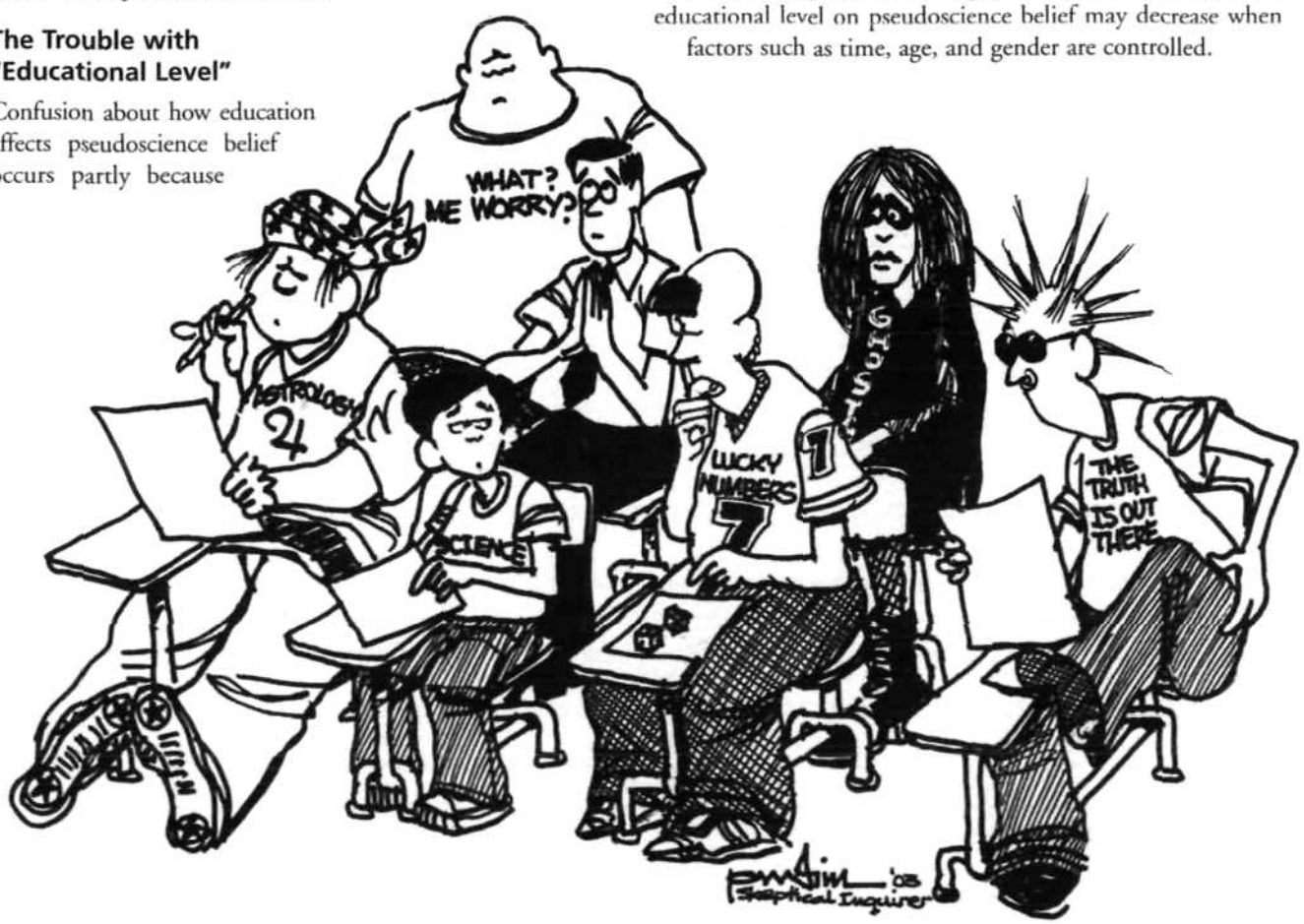
Of these, education has been studied the most. A major expected consequence of formal education, especially college, is intellectual sophistication, both in factual knowledge and skillful evaluation of information. Yet pseudoscience belief relates to level of formal education or degree attainment (the most typical uses of the term "education") in complex and inconsistent ways. Ray Eve and his colleagues (1995) found that New Age devotees can be quite well educated. When he reviewed national surveys, Erich Goode (2002) found that traditional ersatz science beliefs, especially those about Biblical creationism, declined with formal education, although other beliefs, such as time travel or alien visitation, did not consistently do so. Even science knowledge among undergraduates poorly predicted "more modern" pseudoscience beliefs.

We untangle some of these conundrums by refining what it is that educational level does to influence pseudoscience acceptance. Using more than two decades of representative national surveys of American adults, we examine four different pseudoscience topics and several educational dimensions. In the process, we identify more precisely just which aspects of education affect pseudoscience belief.

The Trouble with "Educational Level"

Confusion about how education affects pseudoscience belief occurs partly because the concept *level of education* consists of more dimensions than knowledge or skill attainment, the typical foci in studies of science literacy and pseudoscience support. When everyone studied is a college undergraduate, of course, educational *level* hardly varies. Among non-student adults, educational level may represent social class or relate to other factors such as age or gender, which could also influence acceptance of pseudoscience. Adults with higher levels of education have more exposure to science courses or may be more favorable toward science.

Pseudoscience belief may be affected by these related factors as well as by pedagogical experiences. Goode (2002), for example, identifies traditional religiosity as influencing susceptibility to Biblical creationism appeals; most American researchers also report finding that women or those less educated are more traditionally religious. Partly because those born after World War II are more likely to have attended college than those born earlier, and partly because different generations have unique experiences, *in any one year*, age could predict pseudoscience belief. Adults maturing in the 1960s became familiar with space exploration; teens in the 1990s saw animal cloning and recombinant DNA become reality. Age intertwines with generation, and so time itself should be considered. Moreover, America's educational average rose over time, science may be taught differently now, due to studies such as the Third International Mathematics and Science Studies (TIMSS) or endeavors such as the American Association for the Advancement of Science's Project 2061, and specific ersatz science beliefs may rise or fall in popularity. Thus, the effects of educational level on pseudoscience belief may decrease when factors such as time, age, and gender are controlled.



Second, something directly related to educational experience could be important. Individuals who have elected more science courses may more easily distinguish between science and pseudoscience. College science majors may distinguish more rigorously than those trained in other fields. Finally, intellectual "products" of education, such as basic knowledge, may affect pseudoscience support, especially for "traditional" ersatz science such as astrology. Traditional religiosity generally declines with education level, while appreciation of science rises.

It is important to disentangle what it is about education that affects these beliefs. Are educational level effects simply statistical artifacts that occur because educational correlates independently influence belief? If so, we should pay more attention to the factors that act as a bulwark against a "demon-haunted world." How influential are aspects of the educational experience, such as major field of study? And what roles do intellectual products of education, such as attitudes, play?

The Surveys of Public Attitudes Toward Science and Technology

To address issues about education level and pseudoscience support, we turned to the National Science Foundation Surveys of Public Understanding of Science and Technology 1979–2001 (Miller and Kimmel 1999), an archive of probability sample surveys of the American general public. This series comprises 21,965 interviews with adults at least age eighteen. Respondents for the year 1979 were interviewed in person, those thereafter in random-digit dial telephone surveys.

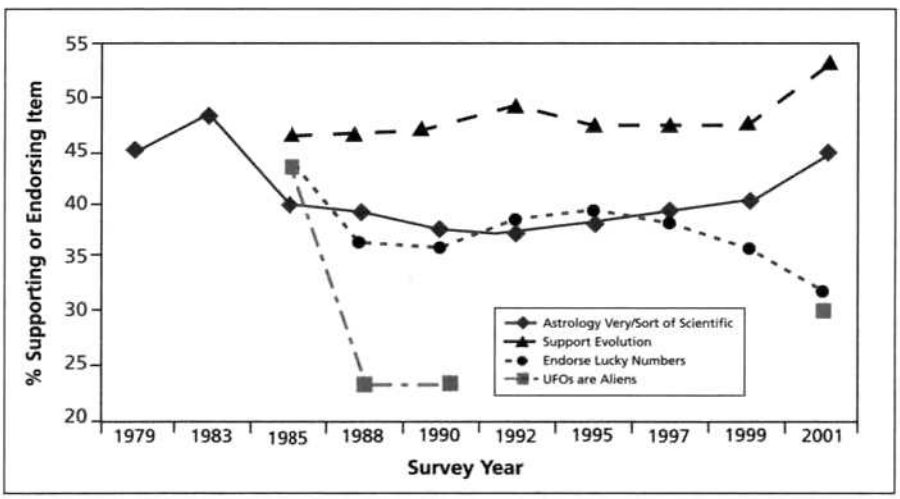


Figure 1. Pseudoscience beliefs over time.

The surveys assess science and technology interest, knowledge and acceptance of science, and science-related activities. Although specific items vary across time, collectively they include more material about pseudoscience belief than any other national survey. The archive also contains a wealth of educational detail: not only level, but major field and exposure to science courses. Unlike Goode, unfortunately, we lack direct questions about an individual's religion. We do use an item tapping traditional religiosity in which respondents indicated how much they agreed that "We depend too much on science and not enough on faith."

Our *Basic Science Knowledge Score* sums ten items asked from 1988 to 2001, the longest time series in the archive. The items address "basic topics" that students encounter in grade school and review during middle school (Earth's center is hot; oxygen comes from plants; smoking causes lung cancer; electrons are smaller than atoms; continental drift; lasers focus sound waves; antibiotics kill viruses and bacteria; humans and dinosaurs coexisted; which travels faster, light or sound; whether Earth goes around the Sun or vice-versa). Counting each correct answer as "1," total scores range from 0 to 10.

The *Science Beneficial Index* averages up to three items with a score ranging from one (negative) to five (positive). The first item assesses whether an individual believes the benefits of science outweigh the risks. The other two assess agreement with the statements: science "makes life healthier and easier" and "science makes our way of life change too fast."

We use four *pseudoscience items* with the longest time series. One item asked whether "human beings, as we know them today, developed from earlier species of animals." An Astrology Index combined how often one reads a horoscope (daily, quite often, occasionally, or almost never) with their perception of astrology as very, sort of, or not at all scientific. A third item asked how much the person agreed or disagreed that "some numbers are especially lucky for some people." Finally, a true-false item read: "Some of the unidentified flying objects that have been reported are really space vehicles from other civilizations."

With the exception of the modest correlation between the astrology and lucky numbers questions (r =0.31), the answers to these items were generally unrelated. The low across-item correlations suggest that the astrology and lucky numbers areas may tap traditional superstitions, but in general these four topical areas are distinct pseudoscience domains.

Pseudoscience Acceptance Over Time

Pseudoscience beliefs are popular among Americans. Over the total 1979 to 2001 period, 37 percent of the general public said that astrology is "very" or "sort of" scientific and nearly half

Susan Carol Losh is associate professor of Educational Psychology and Learning Systems at Florida State University and an American Statistical Association National Science Foundation Research Fellow for 2003–2004. Christopher M. Tavani, Rose Njoroge, and Michael McAuley are doctoral candidates and Ryan Wilke is a master's candidate in the Department of Educational Psychology and Learning Systems. For further information, please contact Susan Carol Losh: slosh@garnet.acns.fsu.edu, 850-644-8778; Fax 850-644-8776.

admitted reading their horoscope at least occasionally (one in six "quite often" or daily). One third accepted lucky numbers and 30 percent felt that some UFOs were alien spacecraft. About half rejected the evolution statement.

The 2001 figures were comparable. Thirty percent felt astrology was at least "sort of" scientific, 44 percent read their horoscope at least occasionally (14 percent frequently), 28 percent agreed "some numbers are lucky" and 29 percent agreed with the UFO item. Forty seven percent rejected the evolution item. Sixty percent of Americans also agreed that "Some people possess psychic powers or ESP"; 89 percent agreed that "There are some good ways of treating sickness that medical science does not recognize"; and half said magnetic therapy was "sort of" or *"very" scientific.*

In figure 1, we show how these beliefs changed over time. We consider overall trends more significant than annual fluctuations, which, in any one year, could reflect sampling or other methodological vagaries. Astrology, lucky numbers, or UFO-logy acceptance decreased over time, particularly in the late 1980s. This decline agrees with other research from the mid to late 1980s, such as the General Social Surveys, showing that personal reports of paranormal experiences among the general public fell. In early 1988, Donald Regan described how First Lady Nancy Reagan consulted an astrologer, and imparted advice she received to the President. The White House consequently bore the brunt of extensive media ridicule. We suspect that for some time after that, members of the general public were more circumspect about agreeing with items that smacked of superstition. In contrast, support for evolution, barring two upward "blips," remained level.

The apparent time changes in figure 1 help illustrate why multiple controls are important. Between 1979 and 2001, educational level itself increased; any apparent effects of time could reflect events such as the Regan exposé—or be due instead to rising educational levels. We also found that older people were more negative, more often rejecting lucky numbers, astrology, space aliens, and evolution. Women were more positive toward astrology and more often rejected evolution (there were no sex differences on the lucky numbers or space aliens item).

Educational Level and Support for Evolution

Pseudoscience beliefs are unevenly distributed in the American adult population. Since the *Statistical Abstracts* reports that one-third of adults had at least one year of college in 2000, we used the following four basic educational levels: a high school degree or less; a two-year college degree; a baccalaureate; and an advanced college degree. With no further controls, initially all four pseudoscience beliefs declined with higher degree levels. High school graduates were 50 percent more favorable toward astrology than graduate degree recipients. Seventy percent of advanced degree holders supported evolution, but only 41 percent of the high school educated did so. Forty percent of the high school educated endorsed lucky numbers, compared with 18 percent holding advanced degrees. Finally, one third of the high school educated subscribed to UFO-logy compared with less than one-quarter of advanced degree holders.

We used a procedure called Multiple Classification Analysis (MCA) to adjust how educational level affected pseudoscience support, controlling for gender, age, survey year, the number of science courses, elementary science knowledge, favorability toward science, and endorsement of "faith over science." MCA allows us to examine the "net effects" of educational level, taking *all the other factors into account. What typically happens is that* differences by degree level become much smaller once other predictors are controlled than they originally were, when the controls for other predictors were ignored.

Figure 2 presents a "before and after" example using the evolution item. Initially, those with at least a baccalaureate were over 20 percent more likely to agree with this item than high school or junior college respondents. However, educational level differences shrank by half as soon as we considered correlates of education (e.g., age), aspects of the educational experience (e.g., exposure to science classes), and consequences of education (e.g., basic science knowledge). Adjusted evolution support increased among the high school educated, and decreased among college graduates. Over half of the original or "gross" difference by educational level in support for evolution was due, in fact, to factors other than educational level.

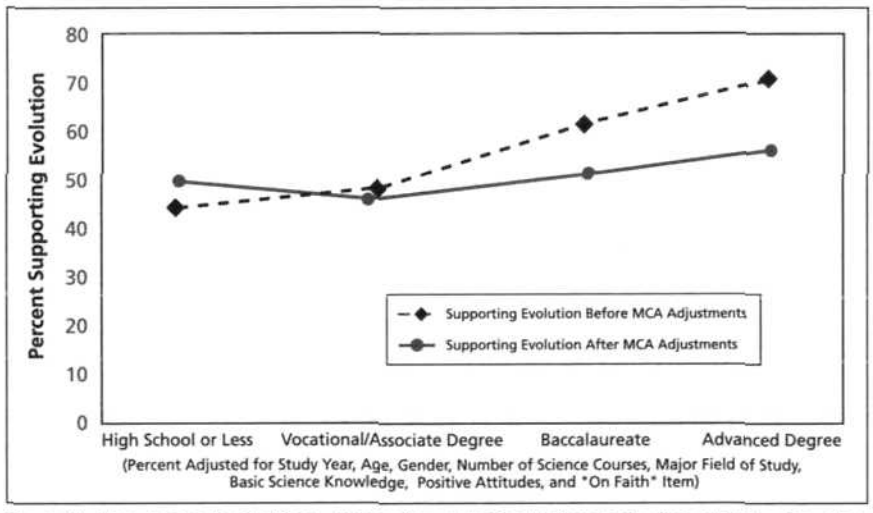


Figure 2. How degree level affects support for evolution (before and after adjusting for other predictor variables).

Similarly, when educational correlates, direct science exposure, or science knowledge and attitudes were also considered, the effects of educational level on astrology support dropped by two-thirds and those on lucky numbers dropped by three-quarters. Even the UFO-logy educational level differences dropped from 10 to seven percent after controls were instituted. We think it safe to say that, on the average, at least half

of what are typically considered "educational level" differences in pseudoscience belief is due to variables other than simple educational exposure.

What's Your Major?

How educational level affects different beliefs or attitudes is often explained by allusions to the college experience. But there are many aspects to the "college experience." Colleges can be public or private, large or small, secular or sectarian, research universities, vocational schools, or liberal arts colleges. College major and exposure to science classes are the most straightforward dimensions of the college experience that should relate to pseudoscience belief.

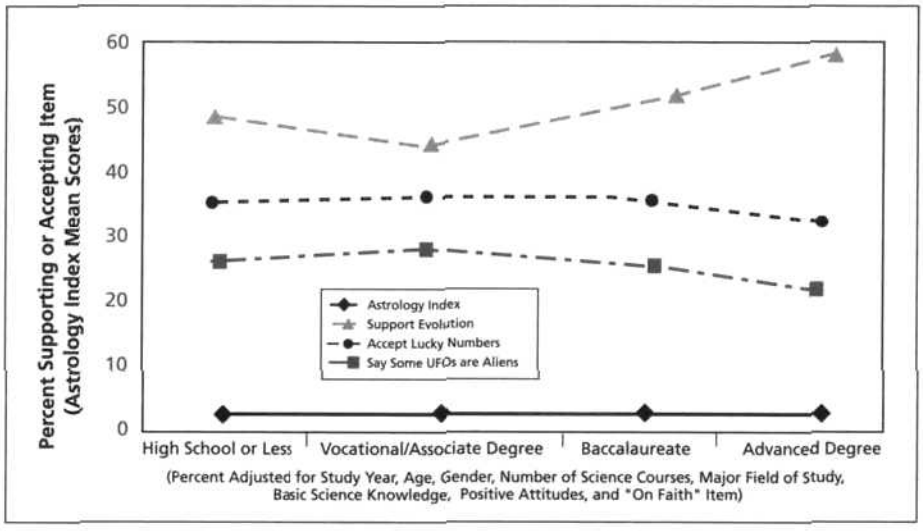


Figure 3. Astrology index and percent supporting or accepting evolution, lucky numbers, and UFO aliens by educational level (after adjustments for controls).

However, we found major field only weakly influenced pseudoscience beliefs. Further, any initial effects of a specific major (e.g., life or physical science majors knew more basic facts, and accepted UFO-logy less, while business majors knew somewhat less, rejected evolution more, and supported astrology or alien spacecraft slightly more) vanished when we controlled for how many science courses an individual had taken.

On the other hand, the effects of electing science courses withstood controls for age, time, gender, religiosity, degree level, college major, general basic knowledge, and positive attitudes toward science. Adults with more science training more often rejected astrology or lucky numbers and more often accepted evolution. However, the number of science courses did *not* have net effects on the UFO item.

Intellectual "Products" of Formal Education

Finally, we considered how basic science knowledge and attitudes toward science, including the religiosity item, related to pseudoscience belief. Knowledge and attitudes had important net effects upon pseudoscience beliefs—although not always in expected ways. Those with higher science knowledge scores more often rejected astrology or lucky numbers and more often supported evolution. But they *also* slightly more often endorsed a UFO-alien connection. Individuals who were more positive about science were more positive toward evolution, and more often rejected astrology, lucky numbers, and UFO-logy.

Individuals who agreed with the "on faith" item were substantially more negative toward evolution. The net effects of this item on evolution rejection were about as strong as *all the educational variables combined.* It had the strongest net effect of any predictor we considered on evolution support. However, effects of the "on faith" item were specific to evolution; they did not increase our understanding of any other pseudoscience belief.

Educational Level: "Net Effects"

The net effects of degree level, controlling study year, age, gender, number of science courses, college major, basic science knowledge, and attitudes, are shown in figure 3. Even considering these factors, degree level continued to predict rejecting superstition or sci-fi fantasy, and accepting evolution. However, as noted earlier, the effects of degree level dropped by half to three-quarters when refinements in educational level measurement were made.

These results tell us it is essential to consider other factors such as age, gender, time, science coursework, and cognitions in assessing how education relates to pseudoscience belief. Otherwise, educational level effects are inaccurately inflated. There are additional factors we did not measure, but which also probably relate to both degree level and pseudoscience beliefs, most notably media exposure and type. An individual's choices of these channels of "informal education" are no doubt influenced by the amount and type of education they receive. However, once selected, media exert influences of their own, whether through reruns of *The X-Files* or CNN.

Discussion

Many Americans accept pseudoscience beliefs. On the average and to some degree, one-third support astrology, lucky numbers, or space aliens, and nearly half reject evolution. Had the evolution item more explicitly addressed random selection, we suspect rejection would have been higher. Both scholars and laypersons believe more education will discourage at least some pseudoscience beliefs. To some extent, this is true.

As we systematically refined "educational experiences," we found that those concerned about pseudoscience support must avoid simplistic, poorly defined notions of "college exposure." For example, the particular ersatz science must be considered. Regardless of education, astrology support fell over time, perhaps because of the "Nancy Reagan effect," when the media discovered the former First Lady consulted astrology reports in attempts to influence American policy. Some effects attributed to "educational level" almost certainly occur because the

college educated have taken more science courses. However, even considering these other factors, as degree level rises, so, too, does pseudoscience rejection, although *the net influence of degree level drops dramatically when measures of education are refined.* Confounded factors, such as age or knowledge, must be controlled in any assessment of educational affects on pseudoscience belief.

We also cannot discount self-selection factors. Youth who value science or reject superstition disproportionately may attend college or choose science majors. Although educators cannot control who continues their schooling, they can influence how and what pupils are taught.

Some scholars, such as Morris Shamos (1995), declare that even well-educated citizens cannot understand scientific terms and constructs at a level sufficient to read a daily paper or magazine and to understand the competing arguments on disputes or controversies (definition from Jon D. Miller, 2000: 24). Instead Shamos suggests that education should instill respect for "experts," i.e., scientists. We suspect his assertion may be partly true, but for subtle reasons not typically considered in civic science literacy. Each year, science becomes more complex and technology more sophisticated. Comprehending nuances outside of one's field can be difficult. Ironically, we suspect that scientific or technological progress actually contributes to pseudoscience acceptance. Consider the Victorian era: mediums and clairvoyants flourished among British and American upper and middle class adults—generally the most educated of their day. Many academics and laypersons supported Social Darwinism in the early twentieth century.

Were these Victorian beliefs really so farfetched, juxtaposed against the technological or scientific advances at the time, such as vaccination; the telegraph; telephones; automobiles; or early airplanes? Simultaneously, Darwinian theory threatened theological positions of humanity as "little lower than the angels" and Jules Verne wrote vividly of submarines and rocket ships. Compared with a steady stream of scientific and technical marvels and imaginative stories, the line between science and fiction in the eyes of the general public can begin to blur.

Our own era has seen space travel, *in vitro* fertilization, cloning, and the Internet. Next to these feats, alien visitation may seem more credible. Only more meticulous knowledge of the scientific and technological *processes* that make "speaking over wires" or air travel possible may allow adults to distinguish between what is viable and what is not. Thus, even among members of the general public with high levels of education, science discovery or applications may open the doors to pseudoscience speculation. We propose that the higher the societal level of scientific and technological achievement and the more seemingly miraculous the attainments, the greater the onus on our educational system to help produce citizens who can tell the difference between fact and fancy.

Although members of the general public cannot always follow a particular scientific argument or fully utilize a technology, many argue the public still should participate in scientific and technological development, sometimes in ethics, and other times in providing a citizen's point of view. This perspective underscores the urgency of educators to help students learn to confront purveyors of pseudoscience. How can effectiveness in combating pseudoscience be increased? Some argue that primary and secondary schools must focus more on process than factual memorization, so that pupils better learn how to tell false science from true. We believe that when students learn effective ways to assess information, they are better prepared later in life when understanding information more informally through media. Some scholars (Goode 2002, Martin 1994) suggest discussing pseudoscience topics during science classes. By talking about why people believe in ghosts or ESP, students can learn how scientific processes and evidence differ from those of pseudoscience. Preemptive arguments against pseudoscience assertions then can provide an inoculation process, one sorely needed to prepare enlightened citizens to participate in modern society.

Even among members of the general public with high levels of education, science discovery or applications may open the doors to pseudoscience speculation.

Note

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Nostradamus's Clever 'Clairvoyance'

The Power of Ambiguous Specificity

How did a French astrologer, dead for over 400 years, become a premier commentator on world events in 2001? The authors' research shows that Nostradamus's dark prophecies are ambiguous enough to "work" for events selected at random and even when they are scrambled.

MAZIAR YAFEH and CHIP HEATH

Amidst the chaos and confusion after the September 11 terrorist attacks, anxious people flocked to the Internet for any information that would shed light on the horrific event and its implications. In the weeks after the attack, Google, the most widely used World Wide Web search engine, predictably reported sharp increases in searches for "Osama bin Laden" and "al Qaeda."

Yet Google also reported that in the two weeks following the attacks, searches for a sixteenth century astrologer surpassed those for bin Laden and his organization (Grossman 2001). In fact, "Nostradamus" became one of Google's top searches, surpassing even the perennial favorite topic of "sex"! (See figure 1 for converging results from the "Buzz

Index" on Yahoo, another popular search engine.) How did a French astrologer, dead for over 400 years, become a premier commentator on world events in 2001?

Michel Nostradamus was a sixteenth-century French physicist and astrologer who gained fame in the Renaissance for *Centuries*, his ten-volume collection of 942 four-line poetic prophecies, which he published in 1555. These prophecies have been eagerly studied for centuries.

In the tumult after tragic events, people over the last 400 years may have turned to Nostradamus to understand their world, just as modern citizens did right after the September 11 attacks. If so, then Nostradamus doesn't really have to predict events before they occur, he just has to look as though he predicted them *after* they have already occurred. That in itself is a pretty clever accomplishment: How could Nostradamus do it?

After spending a year researching his work and running controlled experiments, we suggest a combination of two factors: ambiguously specific prophecies that focus on dark, foreboding events.

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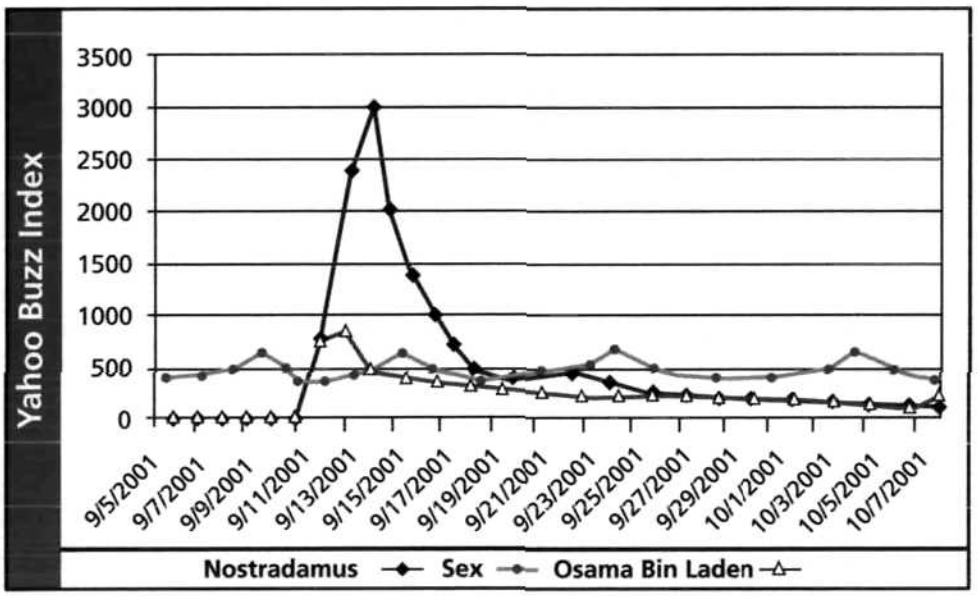

Figure 1. Popular searches on Yahoo in the days after September 11, 2001. (Note that "Nostradamus" beats out "Osama Bin Laden" and even perennial favorite "sex.")

Ambiguously Specific Prophecies

Anyone who has visited a card reader or psychic knows that the lifeblood of the fortune-telling trade is vagueness (such as "You will face an important decision soon"). In part, Nostradamus's prophecies seem to match this vagueness test. He used a famously cryptic, poetic style, interspersing his original French with selected Hebrew, Latin, and Spanish words and phrases, to create an aura of vagueness around each prophecy. Hence, each prophecy is difficult to attribute to an exact event.

But is vagueness enough? Clearly, it is not vagueness that drew Internet searchers to the following Nostradamus prophecy in the days after September 11:

> At forty-five degrees the sky will burn,
> Fire to approach the great new city,
> In an instant a great scattered flame will leap up,
> When one will want to demand proof of the Normans.

On the contrary, it is the prophecy's unnerving similarities to the attacks; it seems written specifically for our time.

Or was it? The art of Nostradamus, our research shows, is that what appears to be specific is in fact generalizable. Nostradamus's gift is that he writes poetry that is apparently specific (at least when someone examines it with a specific historical event in mind), but that is in fact ambiguous—which we use in the dictionary sense of "allowing for multiple meanings." Indeed, it may be ambiguous enough that it could apply to many different tragic events.

But how could we test the hypothesis that this ambiguity contributes to Nostradamus's ability to appear prophetic? One way might be to choose two different events and see whether a particular prophecy could be equally well applied to each. If the same prophecy seems equally prophetic for two very different events, this indicates that Nostradamus is appealing at least in part because of his ambiguity.

With this test in mind, we chose two events for comparison: the September 11 attack on World Trade Center and the London Blitz (the fifty-seven consecutive nights during World War II in which Germany bombarded London). We selected

Maziar Yafeh is a senior at Stanford University majoring in economics and psychology, and Chip Heath is an associate professor of organizational behavior. This project began during a sophomore research seminar that Heath teaches on Urban Legends, Conspiracy Theories, and Other Distortions in the Marketplace of Ideas. Correspondence may be addressed to Heath at GSB-Stanford University, 518 Memorial Way, Stanford, CA 94305. E-mail: chip.heath@stanford.edu.

these two events because they both took place in a specific city and are characterized in pictures, videos, and people's minds by explosions and vivid images of fire.

We concentrated on the words *city* and *fire* because these were key words in the Nostradamus prophecy we mentioned previously that circulated widely on the Internet after the World Trade Center attacks. We found eleven prophecies that contained these key words, and randomly picked ten to use in our experiment. We presented these ten prophecies to two groups of participants; one group was asked to say whether each prophecy indicated that Nostradamus might have predicted the events of September 11, the other whether each prophecy predicted the London Blitz.

Our participants were eighty Stanford University undergraduates, who are typically quite skeptical of notions of prophecy, so any results we find might underestimate the actual success of the prophecies with a less skeptical audience. For each of the ten prophecies, we asked our participants whether the prophecy predicted either September 11 or the Blitz, and gave them three choices: yes, no, and maybe. The "yes" option was almost never used, and the "no" option was used frequently. However, across the ten prophecies, the "maybe" option was chosen a surprising amount. Participants who were asked to think about the September 11 attacks on average thought that 3.2 of the prophecies may have predicted the attacks, and participants asked to think about the Blitz thought that 2.8 may have predicted those attacks. This overall difference was not statistically significant, so our participants in effect said that Nostradamus's prophecies were equally foresightful about (and relevant to) September 11 and the Blitz.

This level of "maybe" responses could suggest that Nostradamus was a pretty good prophet—about a third of his prophecies seemed at least somewhat prophetic about events that occurred 400 years after his death. However this interpretation is disputed by one key fact: participants in both groups were impressed by the *same* prophecies, regardless of whether they considered September 11 or the Blitz. For example, 68 percent of participants thought that the following prophecy might have predicted the September 11 attacks:

> Earthshaking fire from the centre of the earth,
> Will cause tremors around the new city,
> Two great rocks will war for a long time,
> Then arethusa will redden a new river.

Here, the "earthshaking fire" causing "tremors around the new city" might have seemed very applicable; the "new city" seems a good code word for "New York," and the "two great rocks" a good analogy for the twin towers.

However, 61 percent of our participants thought this same prophecy might also refer to the events of the Blitz; the "earthshaking fire" causing "tremors" seemed applicable to the Blitz as well. The word "new" seems to have been ignored since London is not one of Europe's newest cities, but in the case of the Blitz the "two great rocks" warring may have been seen as emblematic of the two strongest European armies—Germany and England—facing off across the English Channel. This "successful" prophecy is thus ambiguous enough that it seems almost equally applicable to two very different events, yet it contains enough specific detail that it looks as though Nostradamus is on to something.

Our results here are consistent with research in psychology on individual decision making. Research on "confirmation bias" and related topics has shown that individuals don't naturally consider alternative hypotheses for a particular pattern of data (see Klayman 1995; Nisbett and Ross 1980). Our participants, though smart and skeptical, fell into this same well-documented trap. Implicitly they were asking "Did Nostradamus predict the event I'm considering?" As they searched for evidence that confirmed or disconfirmed whether he did so, they probably weren't paying attention to the ambiguity of his prose, and they almost certainly weren't asking themselves whether the same prophecy could have predicted *other* events. Yet by neglecting competing hypotheses, our participants left themselves open to be fooled by the ambiguous predictions. Those participants thinking about the Blitz and its connection to the "two great rocks" probably did not consider that the same "evidence" would look equally prescient if they had been considering the New York City attacks instead.

In contrast to the ambiguity of the "successful" prophecies, the least successful prophecies contained imagery that was less ambiguous and offered concrete evidence that could be historically verified. Only 12 percent of our participants thought

the following prophecy might fit September 11 and 17 percent thought it fit the Blitz:

> The great city will be thoroughly desolated,
> Of the inhabitants not a single one will remain there,
> Wall, sex, temple and virgin violated,
> Through sword, fire, plague, cannon people will die.

This prophecy is partially applicable to both events because it evokes a "great city" where some people die by fire. However, it is less convincing than the first because it is more specific: New York and London were not "thoroughly" destroyed and neither event prominently featured sex, temples, virgins, or swords.

Across the ten different prophecies, we found a high correlation between the prophecies that supposedly predicted the two events—events that were separated by half a century, different geographies, and different political contexts. True, both events involved "fire" and a "city," but so did most other wars in the last 2,000 years. These results suggest that Nostradamus's true genius was his ability to write descriptions of crises that are sufficiently ambiguous that they could describe almost any crisis.

But how far could we push the ambiguity hypothesis? Nostradamus's prophecies frequently predict "war"—indeed, war is featured in a conspicuous 104 of his 942 prophecies. Are his prophecies ambiguous enough that any of those 104 prophecies could be applied to *any* war? We asked a group of Stanford undergrads to list all the wars they could think of, and we took the top thirteen mentions. Because our students were at an American university, there was an American bias to the wars they remembered, but that did not affect the test we wanted to run. We randomly selected thirteen from 104 war prophecies and assigned them at random to the thirteen different wars; then we asked seventy-four students to indicate whether the prophecy might have predicted the war.

Because we're assigning prophecies to wars at random, we might expect the overall success to be quite low: historical accounts of various wars could not be interchanged at random. If the prophecies had any (unambiguous) content, they shouldn't be interchangeable either.

However, the prophecies were ambiguous enough that on average 29 percent of our participants said any prophecy selected at random "may have" predicted a war selected at random. When the same prophecy can apply equally well to the French Revolution, World War II, and the war on terrorism, this makes Nostradamus a relatively imprecise prophet but a very clever wartime poet—able to capture the overall atmosphere of war in a seemingly specific way, yet speaking ambiguously enough that his prophecies are for the most part not limited in time or location.

To take the poet-versus-prophet test a step further, we thought about how to preserve the poetry while destroying any potential prophecy. Nostradamus's poetry is ambiguous enough that we thought it could be largely preserved even if we scrambled the lines from different prophecies. If Nostradamus had

Can you find the original Nostradamus prophecies?

Three of the prophecies in this table are from Nostradamus. The other three are versions we created by scrambling the lines of his original prophecies. Can you tell which is which?

1
Arms will be heard clashing in the sky,
That very same year the divine one's enemies,
They will want unjustly to discuss the holy laws,
Through lightning and war the complacent one put to death.

2
The two nephews brought up in diverse places,
He assembles the pardoned before the gods,
They will come to be elevated very high in making war,
Far away where their prince and rector will die.

3
The great younger son will make an end of the war,
Will have carried off the prize from one greater than he,
He holds a flowering branch in his beak,
Without armor he will be surprised suddenly.

4
Two royal brothers will wage war so fiercely,
That between them the war will be so mortal,
That both will occupy the strong places,
Their great quarrel will fill realm and life.

5
The two nephews brought up in diverse places,
Naval battle, land, fathers fallen,
They will come to be elevated very high in making war,
To avenge the injury, enemies succumbed.

6
Through long war all the army exhausted,
Too great a faith will betray the monarch,
Instead of gold or silver, they will come to coin leather,
To avenge the injury, enemies succumbed.

(#1, 4, 5 are original and 2, 3, 6 are our scrambled versions)

Prophecies taken from: www.ebooks3.com/ebooks/nostradamus_centuries.html.

The top thirteen wars recalled by our participants. We used these to test whether any of Nostradamus's "war" prophecies could be randomly assigned to any randomly selected war.

American Revolution
World War II
War on Terrorism
American Civil War
Vietnam War
World War I
French Revolution
Gulf War
Korean War
Spanish Civil War
French-Indian War
War of 1812
Thirty Years War

any prophetic ability, this scrambling procedure should destroy any coherent aspects of his prophecies—certainly reducing historical accounts or news stories to gibberish.

We randomly scrambled the lines of our thirteen prophecies, and matched one scrambled prophecy with each of the thirteen wars. Then we asked a second group of seventy-two participants to assess whether the prophecy predicted the war.

Nostradamus offers pronouncements of ambiguous doom—so ambiguous, in fact, that his war prophecies can apply to *any* war, and appear equally prophetic even when scrambled.

With the *original* prophecies, 29 percent had said maybe. With our *scrambled* prophecies, 34 percent said maybe. Thus, if anything, our scrambled prophecies impressed people as *more prophetic* than Nostradamus's originals. (The difference wasn't statistically significant.)

Dark Prophecies

While ambiguity is probably the most important feature of Nostradamus's prophecies, another notable feature is their dark, foreboding quality. People are more likely to discuss and try to explain negative events than positive ones. When we're upset or surprised in a negative way, we look for explanations; when we're satisfied or things are proceeding according to our expectations, we don't (Wong and Weiner 1981; for more general discussion, Weiner 1985; Taylor 1995). By writing many prophecies involving negative events, Nostradamus maximized the chances that someone confronted with a crisis might look for—and find—something in his prophecies that would remind them of their own current crisis.

How Effectively Does the Following Prophecy Predict WWII?

For a long time a gray bird will be seen in the sky,
They will be thoroughly devastated by sea and by land,
Those (actions) started in France will end there,
Captured, dead, bound, pillaged without law of war.

58% of our participants thought that Nostradamus may have predicted WWII with this prophecy, but it's actually one of our scrambled versions.

To test how much Nostradamus focused on the negative, we randomly sampled 100 of his prophecies and asked a group of students to assess whether they concerned positive or negative events. More than three times as many prophecies discussed negative events as positive ones. We also asked a group of students to list words associated with events of good fortune and misfortune. The top examples of good fortune were *birth* and *discovery*, while *war* and *death* topped the misfortune list. Searching through all of Nostradamus's prophecies, we found that while less than five of them dealt with either *birth* or *discovery*, 104 mentioned *war* and ninety-four mentioned *death*. We're not sure that this focus on the negative makes Nostradamus a good prophet—after all, prophecies of great discoveries and the births of great people might come in handy. On the other hand, when people search for explanations after a tragic event, Nostradamus allows himself many opportunities to provide them with an "answer."

Nostradamus, a clever poet, offers pronouncements of ambiguous doom—so ambiguous, in fact, that his war prophecies can apply to *any* war, and appear equally prophetic even when scrambled.

Our results show that there is about a 30 percent chance that any randomly selected war prophecy will remind some readers of any randomly selected war. But Nostradamus was sufficiently prolific that his readers don't have to stop with just one prophecy. Imagine someone who was sufficiently intrigued to read all 942 prophecies; wouldn't at least one of the 104 prophecies about "war" seemingly provide an even better match than one selected at random? By writing many prophecies, Nostradamus could take advantage of people's natural tendency to search longer and harder for explanations at times of crisis.

We offer a recipe for a modern prophet: Write a lot of prophecies, focusing on the negative. Take care to keep your prophecies as dark and ambiguous as possible—lots of doom and gloom, very few unambiguous specifics. And someday you too might be invoked as a commentator on world events.

Now if someone could only figure out how to collect royalties from beyond the grave. . . .

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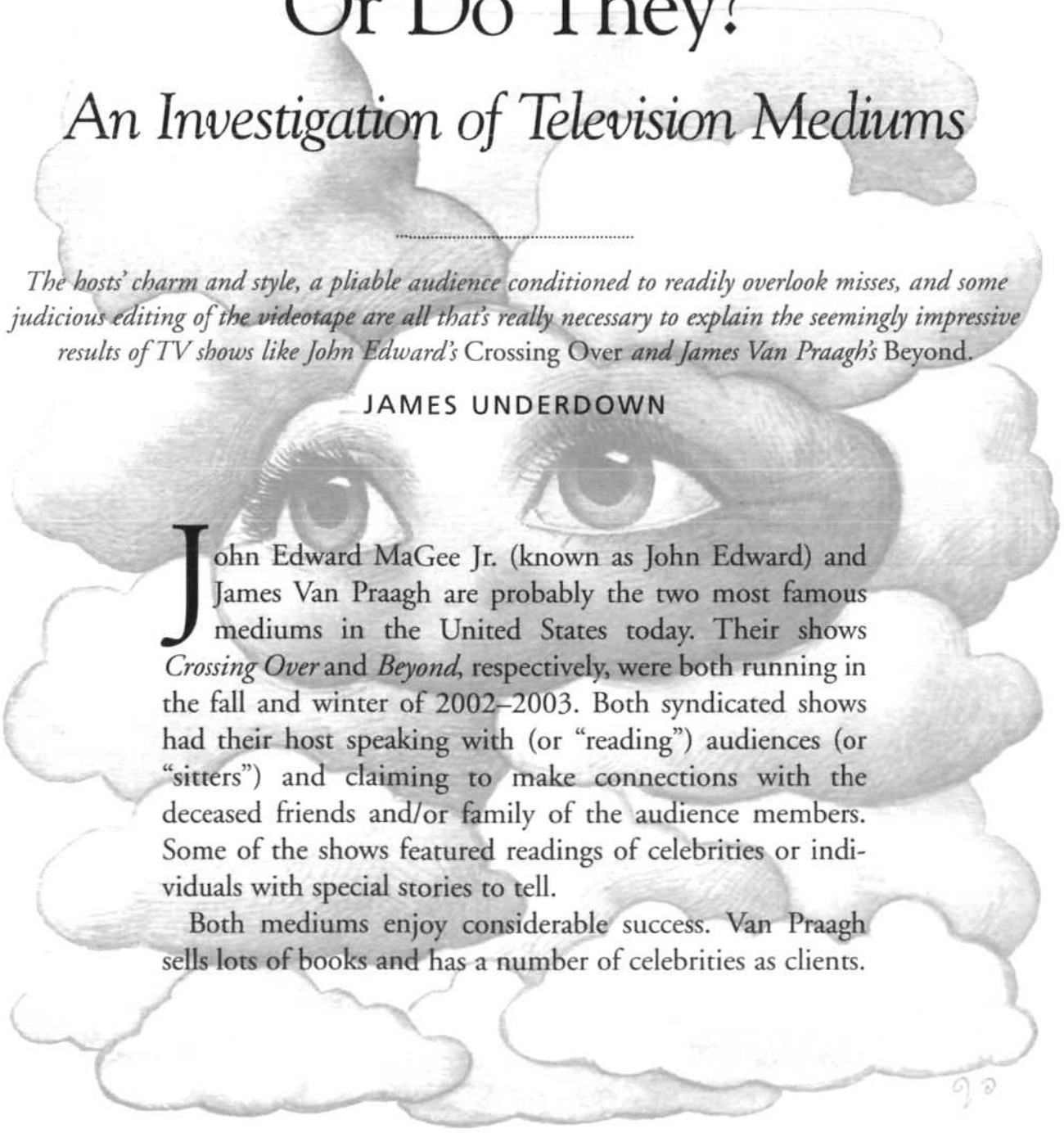
They See Dead People—Or Do They?

An Investigation of Television Mediums



The hosts' charm and style, a pliable audience conditioned to readily overlook misses, and some judicious editing of the videotape are all that's really necessary to explain the seemingly impressive results of TV shows like John Edward's Crossing Over *and James Van Praagh's* Beyond.

JAMES UNDERDOWN

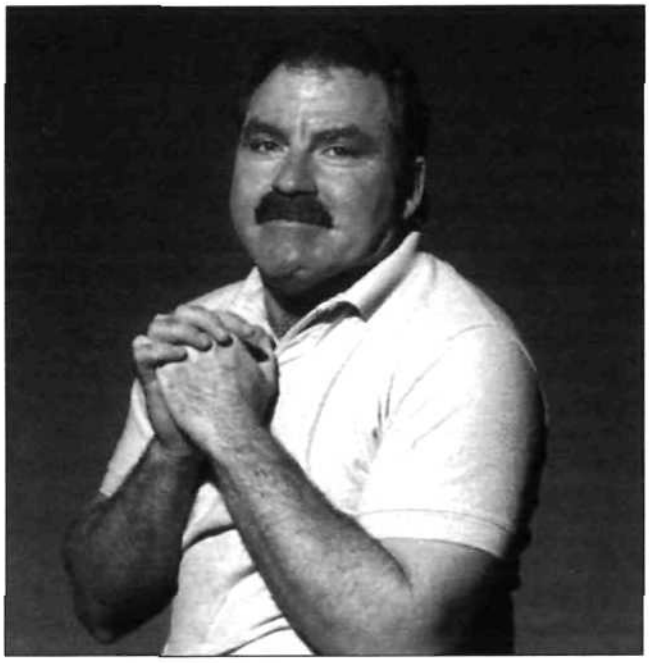
John Edward MaGee Jr. (known as John Edward) and James Van Praagh are probably the two most famous mediums in the United States today. Their shows *Crossing Over* and *Beyond*, respectively, were both running in the fall and winter of 2002–2003. Both syndicated shows had their host speaking with (or "reading") audiences (or "sitters") and claiming to make connections with the deceased friends and/or family of the audience members. Some of the shows featured readings of celebrities or individuals with special stories to tell.

Both mediums enjoy considerable success. Van Praagh sells lots of books and has a number of celebrities as clients.

Edward, also, hawks books, and has been on the air since June of 2000. Both men continue to play to large audiences around the country. Even SKEPTICAL INQUIRER has included articles about them.[1]

Last August, when Van Praagh started taping *Beyond* a few blocks from the Center for Inquiry–West in Hollywood, our homegrown Independent Investigations Group (IIG) sprang into action. (The IIG consists of a dedicated group of inquirers who participate with CFI–West staff in hands-on investigations.)

Even some skeptics seemed to be impressed with the mediums' on-camera abilities, and speculated about why they seemed so successful. Were they getting "hot reads" (using information gotten prior to the taping) through audience microphones, audience plants, or through production research? Was there some trick we weren't aware of helping these two look so accurate? Would the tapings we witnessed differ from the fully edited, aired shows? We attempted to find out.



James Van Praagh

Hot Reading

James Van Praagh

Several IIG members attended two separate *Beyond* tapings, descending in groups of seven or eight to the studio after a briefing at CFI–West. We split up into smaller groups with our well-hidden recording gear, and went to work.

Before the actual tape date, a number of us who had requested tickets received phone calls from Van Praagh's production people asking who we wanted to contact and what our story was. These calls seemed to be searching for candidates for the more intense, one-on-one readings Van Praagh included in each show.

James Underdown is Executive Director of the Center for Inquiry–West, 4773 Hollywood Blvd., Hollywood, CA 90027; www.cfiwest.org; e-mail: info@cfiwest.org.

On the day of the tapings, we split up in order to have a better chance of spotting plants in line as the audience waited outside the studio. We all signed fake names on the voluminous release form (see below), and engaged in conversations about fictitious friends and relatives. If any of these stories made their way into a reading, we'd know the information had been obtained somewhere in or near the studio.

Upon entering the studio, we noticed standard audience microphones hanging from the ceiling, and speakers placed along the floors. We also monitored both Van Praagh's and his warm-up woman's pre-show conversations. That proved to be interesting.

While phone-interviewing audience members might be a conduit of information to Van Praagh, it's also consistent with the best interest of the producer trying to find compelling content. Indeed, Van Praagh's in-studio readings were so unimpressive that our suspicions of hot reading were lowered. If he had his researchers gleaning spicy tidbits for his readings, they weren't doing a very good job, for he often struggled in his efforts.

Some of the remote one-on-one segments were more impressive, but those generally took place in the sitter's homes where many clues to his or her life might be noticeable. We don't know if producers leaked information to Van Praagh or not, and we never saw raw footage of what went on at the remote tapings. Editing, as I will discuss later, could have played a crucial role.

We saw no evidence of spies in line trying to draw information from people. We gave no information beyond the contact data on the release form. None of our fake names or stories turned up in readings. Before Van Praagh's taping began, loud music was played which would have made it extremely difficult to hear a conversation from the audience microphones.

Van Praagh was guilty of at least one cheat that could be considered a hot read. Before tape was rolling, he signed some books and was chatting with members of the audience. He learned during one conversation that a woman in the audience was from Italy. When the cameras were rolling, he asked who in that section was from another country. If one hadn't seen the earlier conversation, the woman raising her hand in the affirmative would have been impressive, when in fact he knew quite well what the response would be.

John Edward

I attended a taping of John Edward's *Crossing Over* in Queens, New York, alone in November of 2002. *Crossing Over* looked like a production that had a few years under its belt. There was a waiting room instead of a long line outside, the security was a little better (I had to show a real I.D.), and they seemed to run a much tighter ship, though I did get my pocket-sized digital recorder inside with no problem.

Again, there were no indications of anyone I saw collecting information. Edward, too, played music fairly loudly, making it tough to hear normal conversation. And again, none of his readings contained the kind of specific information that would raise an eyebrow of suspicion. In fact, during most of the show I witnessed, John Edward was a bad cold reader. He, too,

struggled to get hits, and in one attempt shot off nearly forty guesses before finding any significant targets.

Both Edward and Van Praagh potentially have a big advantage when they shoot special segments with celebrities. Many famous people have reams of biographical information available on the Internet that would at least aid in a session with a medium. We saw no direct evidence that such information was being used, but it's certainly out there for the taking.

Cold Reading

Cold reading, in a nutshell, is an interactive technique where one fishes for information while giving the appearance of receiving that information from supernatural sources. Both of these men rattle off gobs of guesses until they find a vein of hits with one of their audience members. They are very adept at steering out of dead ends and helping the crowd forgive and forget their mistakes.

In the context of a studio audience full of people, cold reading is not very impressive. Consider that the audience at each of the tapings we witnessed consisted of about 200 people, in three sections of sixty-to-seventy each. If the average person's address book holds about 150 people[2] (mine has well over 300), we can probably be safe in presuming that we actually *know* many more people than those whose numbers we have. But let's use the 150 figure as a very conservative estimate of an active database from which most people have to draw.

This means that when John Edward or James Van Praagh asks a section of his audience, "Who's Margaret?" he is hoping there is a Margaret in the 10,000 people in the database of that section. If there is no answer, they open the question up to the whole audience's database of over 30,000 people! Would it be surprising for there to be a dozen Margarets in such a large sample?

I submit that these databases are so large that they explain the occasional amazing-sounding home run of a hit. I saw John Edward swinging for the fence by asking who died from getting hit by lightning. When no one answered even after he amended the guess to mere electrocution, he remarked that you'd think you'd remember if you knew someone who passed from something like that.

Let's not forget that when a medium initiates a conversation with an audience member or group of members, he enjoys the benefit of visually appraising whomever he's speaking with. When conversing with a group of ladies over sixty, Edward guessed the names Helen and Margaret as the peers and parents of the women, not Tiffany or Courtney, names more likely to be given to younger people. Any good cold reader uses visual clues to refine his guessing.

Audience Preparation

Both shows went through a lot of effort to get their audiences in the right frame of mind before taping. People came to the tapings to contact a dead loved one. The *Crossing Over* instructions put it bluntly. "If you feel you will be too embarrassed, too frazzled, or just not interested, we ask that you give up your seat to someone who is anxious for a reading."

The audience was admonished not to expect to be read, and that some things the host would say would make sense, others wouldn't. Much of the pre-show rhetoric seemed to be aimed at keeping our expectations low. Both men were very self-effacing, charming, and good-humored, endearing themselves to the audience.

The eight-page letter Edward sent out to his audience included sections entitled "Information For A Positive Session" and "Recommended Things To Think About." The latter began with the subsection "Know your entire family tree." He reminds us to remember dates, to visualize spouse's families, estranged family, and stepfamilies—even pets. Your personal database, after all, is only as good as your ability to recall it.

John Edward in the studio of his show *Crossing Over* on the Sci-Fi channel on July 7, 2000. Edward chats with recently and not so recently departed people during the course of the show. (© Frances M. Roberts)

After a rather New Agey, meditative preface, Van Praagh's warm-up person was emphatic about reacting openly to what James was saying. How's he supposed to know if he's on the right track? she might as well have said.

Please Release Me . . .

Anyone attending either *Crossing Over* or *Beyond* had to sign a four-page appearance release. (Standard releases are one page.) Edward's release had the feel of a document written by someone just accused of cheating. It seemed to focus on representing that attendees had no outside contact with Edward or his staff, or in documenting that fact if they had. This tone was

reinforced vigorously in the studio where we were reminded constantly not to talk about ourselves or those who we were trying to contact. It was as if the specter of Harry Houdini were floating above the stage pointing a finger.

Van Praagh's release—also four pages—included a non-disclosure section that reads in part: "Neither anyone acting on my behalf, nor I . . . shall speak to any newspaper reporter, print or television journalist or other media representative or source about any aspect of my participation in the Series. . . ."

Cut, Cut, Cut and Print

We decided that the best way to see if any editing wizardry was taking place on these shows was to record segments of the live taping and compare those to the edited versions America saw on the air. What we found was one of the keys to the TV psychic kingdom.

I have some experience sitting in an editing room trying to turn large amounts of raw videotape into small amounts of polished gold. So I know that virtually everything you see on TV has been precisely edited for both time and content. We cannot indict these programs for editing the footage recorded in the studios, but it should be understood that the aired tape does not represent how the readings went in the studio. The aired versions of these programs show a much more successful account of the readings. Here are two examples.

This is what aired . . .

Van Praagh: You were saved by someone. A car thing, or something where you were . . .

Woman: We actually had a car accident four months after my husband died. And we were in a very bad collision.

Van Praagh: You almost died, honey. Because I'm being told by your husband that you were saved, Ok?

This is what happened...

Van Praagh: You almost died, honey. Because I'm being told by your husband that you were spared, you were saved, Ok? You were saved, all right? And I know[3] . . . something about Jesus here, Ok? Saved with Jesus, or something about Jesus, and if you believe in Jesus, or a religious element. And I don't know, maybe a church with the name Jesus in it? Or there is something about Jesus. Or there's . . .

Woman (interrupting): Well, we're Jewish! (Big laugh from the audience.)

John Edward's editor fine-tuned many of the dead-ends out of a reading riddled with misses. Here, the italicized parts never made it to air.

Edward: Ok, just so you know in my reference, how I got it was a funny thing. So whatever race you went to go see, that you had taped, something funny happened at it, because I would have thought you went to a comedy show. Ok. *Just so you know that you viewed it, he viewed it as a funny thing. Ok.*

Now the twenty-sixth is significant your grounding birthday anniversary but there's a twenty-sixth connection. I also feel like I don't know if . . . I think there's a Michael that's passed as well. I know your Michael's [to the woman] here, but I've got a Michael who's passed who's connected here as well. And I think he either had cerebral palsy, or he had like a neural muscular disease.

It's a name like Michael or Mark, Mick, an "M" name I feel like he like cerebral palsy, he had something like spina bifida—there's like that kind of a feeling. Are you sure it's not for you? That's not for you? . . .

Man: No

Edward: Positive?

Man: Positive.

Edward: He's with you or behind you, but he's right here.

Who would have like a penny or a like coin that's like laminated or saved?

Woman: I would.

Edward: Then this is for you guys. So somehow you guys are connected to this kid. Or to this—it might not have been a kid, but he feels like he's a kid to me. There's an "M."

We saw James Van Praagh stop tape during a one-on-one, prearranged reading after missing all but one of his first six or seven guesses. He then restarted the tape and used the one correct guess at the beginning of the new session. I think most people would call that cheating. Skeptics and television viewers everywhere should be mindful that a good editor can make a pitcher bat a thousand, magician David Blaine levitate above a sidewalk, and a former-dance instructor sound like he's conversing with dead people.

Television psychics generally have a pretty good recipe for appearing to possess paranormal ability. Large audiences gobble up these unreality shows like popcorn.

Skeptics have been served these hot and cold reading techniques for ages, and we saw nothing new or surprising in their methods. The "hit" rate we witnessed for both John Edward and James Van Praagh was disappointing at best. But the fat got "cleaned up in post" (production), as they say in Hollywood.

The mixture of a well-prepared and uncritical audience made it easy to create an atmosphere of cooperation and success in the studio. Strict appearance releases and competent editing made it easy to keep the lid on mistakes and make the medium seem impressive.

Postscript

Apparently, Hollywood wasn't big enough for both men; mega-distributor Tribune Media Services dropped James Van Praagh in January 2003. Trade magazine *Daily Variety* said it best with their headline, "*Beyond* Sees White Light."

Acknowledgments

Thanks go out to the members of the Independent Investigations Group who participated in this investigation, with special thanks to Milt Timmons and Margery Kimbrough for help with transcription, and to Roger Schlueter for editorial notes.

Notes

1. See Joe Nickell's *Speaking to the Dead?* In the November/December 2001 SI. Also, Ray Hyman's "How *Not* to Test Mediums" (SI January/February 2003) strongly critiqued the so-called 'Afterlife' experiments that made use of mediums including John Edward.

2. According to Matt Ridley, author of *The Origins of Virtue* (Penguin Viking 1996).

3. Here, Van Praagh is saying, "I know" to some unseen voice or spirit. □

Energy, Homeopathy, and Hypnosis in Santa Fe

Skeptics get called closed-minded. As an experiment, why not immerse oneself in the mindset and environs of the believers? Santa Fe, New Mexico, is an easy place to do it.

TODD SEAVEY

Santa Fe is the sort of place where every other store is selling some sacred Hopi artifact, and even the barbershops have vaguely New Agey names, such as Planet Hair. The woman who runs the hotel I stayed in told me she's an acupuncturist herself. When I first visited the plaza at the center of Santa Fe years ago, I walked right into the middle of a music festival dedicated to the earth goddess Gaia. A large woman with a wreath on her head, backed by a group of folk musicians, encouraged the watching crowd to plant their feet firmly on the ground, then feel the energy of "the master crystal of Gaia" at the center of the Earth flowing through them and up into the stars as they reached up to embrace the "wonder that is you." I was amazed how

many people played along, but I figured I could remain safely uninvolved in the crowd. That is, until she asked everyone to hold hands, and every last person—some of them surely just tourists passing through the plaza after dinner—appeared ready to do so. I beat a hasty retreat.

My research trip to Santa Fe for this article would require greater bravery than I had shown on that earlier visit, though. This time I was determined to give the alternative thinkers a thorough hearing, to avoid growing hardened and dogmatic in my skepticism.

Located on a high plain in near-desert conditions, Santa Fe is the site of the oldest church in the United States (indeed, it is older than the United States and was built by the Spanish). Having recently celebrated its four-hundredth anniversary, the small church sits right next to the oldest house in the United States. Both are reminders that America is older than its Enlightenment-era rebirth in 1776. Santa Fe is a mecca for Earth-lovers and people seeking inner peace away from the modern world, such as the women going through some sort of tai chi-like ritual near my hotel each morning. Ironically, Santa Fe is also close to the Los Alamos nuclear laboratory site. More than a few tourists have probably taken a left turn at Albuquerque, after visiting the formidable bombers and missiles at the National Atomic Museum, and only hours later visited a peace-loving shaman in Santa Fe.

Among those I met, each representative of larger trends in Santa Fe, were an energy healer, a homeopath, and a hypnotist.

Energy Medicine and Learning from the Psychic Surgeons

Lorin Parrish, director for fourteen years of the New Mexico Academy of Healing Arts, told me that her academy has used "a variety of European methods." She says they have included "things like radionics out of England, color therapy, sound therapy, a lot of things that now are known as vibrational medicine." Most of these therapies involve flashing lights or making sounds at patients who have vague ills such as fatigue, then asking them if they feel better. Sometimes, of course, they do. The techniques are particularly popular in poorer European nations such as Russia, where conventional medical treatment is harder to come by. Interestingly, many of these methods do not predate modern medicine but are in fact by-products of its early days, when technology's success rate seemed high enough to make any new-fangled technique involving a machine worth a try: electricity, vibrating belts, radium—why not?

The Academy of Healing Arts has moved increasingly toward teaching old Asian massage and acupressure methods, though. "Very rarely do the clients say 'I feel nothing'...If someone's really blocked physically, I think they're going to have a harder time feeling the energetic flow," said Parrish. Certainly, one can acknowledge the relaxing power of massage without buying into the whole accompanying theory of "energy meridians" running throughout the body. Sometimes, though, no amount of generous metaphorical interpretation can make these methods "true." For instance, Parrish said that her inspiration to delve into these treatments was another practice, one that most people would consider far more dubious than massage.

Parrish's case raises the question of whether a practice that stands the test of time necessarily does so because there's something valuable in it or merely because the practices are great cons that keep on working year after year.

"When I was seventeen, I studied in the Philippines with healers. Seeing them reach into the body, remove kidney stones . . . one minute you see blood and the next minute you see someone healthy. It was pretty stunning." She sounded perfectly sincere about her faith in the so-called psychic surgeons of the Philippines and offered no negative comments about them, even saying that she never worried they were fakes. Yet, when I asked her whether, as skeptics say, the psychic surgeons are merely using sleight of hand to make it *appear* that they are removing tumors without making incisions, she said: "I am sure that the majority of people working on that kind of level are frauds. I'm convinced of that. [However,] I do think . . . I met some healers . . . working from a place that was very shamanic, very ancient." What Parrish does not say is that faith in such psychic surgeons can keep people from seeking the mainstream medical care they need. Ailing actor Peter Sellers, for example, placed his trust in psychic surgeons until it was too late to prevent his death. No doubt many less famous victims have perished under similar circumstances.

Parrish's case raises the question of whether a practice that stands the test of time necessarily does so because there's something valuable in it—which is what someone sympathetic to tradition, indeed sympathetic to the human mind in general, would hope—or merely because the practices are great cons that keep on working year after year. No matter how many generations of people lose money in shell games or three-card monty, the games still get played on the streets of big cities everywhere. Is it really because the players are "getting something out of it," generation after generation, or is it

Todd Seavey edits HealthFactsAndFears.com, Webzine of the American Council on Science and Health. Research for this article was conducted under the auspices of a Phillips Foundation journalism fellowship. E-mail: seavey@acsh.org.

just that the losers—untold millions of them—have less incentive to pass on the hard lesson they've learned than each new generation of dealers has to perpetuate the con?

Homeopathic—Or Merely Empathic?—Remedies

The question becomes more complicated if it's unclear whether the desired effect of a given practice is emotional or physical. "A great deal of the practice of homeopathy is dealing with emotional and mental symptoms," acknowledged Kenneth Stoller, a pediatrician who came to Santa Fe in hopes of starting up a homeopathic institute but later decided that California might be more receptive (after I met him, he moved to Los Angeles to start an interdisciplinary health team there). Stoller believes in homeopathy's curative powers but told me that it is a mistake to judge homeopathy by its physical effects alone or to dismiss mental effects as secondary. That strict Cartesian division between mind and body is the great mistake of Western rationalism, Stoller said, and many other alternative health aficionados agree with him.

Stoller believes in homeopathy's curative powers but told me that it is a mistake to judge homeopathy by its physical effects alone or to dismiss mental effects as secondary.

"Let's say somebody has a skin rash," he explained. "In regular medicine, you go to a dermatologist and they'll tell you to rub steroids on it." Some forms of homeopathy will also recommend a simple topical cure, but "the next layer down would be to take a remedy that would not only deal with the symptom of the rash but would be compatible with that individual's emotional and mental picture, and then the remedy you pick for the rash would have a much better chance of working on that person." He said that traditional Chinese medicine has acknowledged the mind-body connection for thousands of years and that, ironically, it was the Communists' Cultural Revolution of the 1960s and 1970s that steered China's doctors toward American-style, more materialistic medicine.

Stoller has also taken an interest in early-modern medical devices and has secured patents on devices of his own that look like props from the movie *Metropolis*. All of them are based on the belief that the body's electrical fields are closely linked to its well-being. One device measures minor electrical imbalances in the body, another detects electrical fields at a distance, and the most intriguing is intended to tell a woman when she's ovulating based on fluctuations in the electrical impulses at her fingertips. Arrayed in Stoller's living room, the patent plaques that bear his designs have a certain DaVinci-esque feel to them. A somewhat pessimistic man, Stoller told me he's not holding his breath waiting for financial backing to mass produce the devices.

He lived on a mountainous ridge on the outskirts of Santa Fe back when I visited him, and around sunset I watched him step onto an outcropping of rock near his house and play the bagpipes, as he told me he did regularly, his howling dogs accompanying him. After the piping, it seemed like an appropriate time for me to depart. But he had one more item to share with me: the transcripts of his sessions with self-described channelers. He believes that prophetic information from these other-dimensional spirits may have prevented an accident in

Gerald Fried

the water system in California and that the spirits show a keen understanding of environmental issues, issues Stoller said are inextricably linked to human health. I listened patiently and then departed.

Reality Matters Less When You're Hypnotized

If alternative medicine is sensible, practical, and gets real results, why do its practitioners seem to be the sort of people who fancy they're communicating with aliens? And doesn't that sort of thing put a crimp in their credibility when they seek financial backers to mass produce their medical devices?

Simmerman dismissed the mind-matter distinction altogether, suggesting that for many in the alternative medicine community, there is no sharp dividing line between material reality and the imagination.

The wisest answer to these questions that I heard while in Santa Fe may have been provided by Tim Simmerman, director of the Hypnotherapy Academy of America, a Santa Fe organization that specializes in therapeutic hypnosis. "Faith is an inner expectation that what I'm believing will *become* real," Simmerman told me. He dismissed the mind-matter distinction altogether, suggesting that for many in the alternative medicine community, there is no sharp dividing line between material reality and the imagination. The fact/fantasy distinction just doesn't matter much to them.

Simmerman said he and his wife, who also works at the Academy, share a philosophy similar in some ways to Christian Science, which posits that faith can alter the physical universe, but Simmerman and his wife believe individual desire and reasonable expectations must be added to faith in order to get results. He said that hypnotherapy could be one of the greatest aids to faith and willpower ever devised but that for far too long it was subsumed under conventional psychiatric practices. "In order for psychologists to reach the same kind of credibility that Western, allopathic medicine was reaching, they had to match the medical model. So, early psychologists had to take out something," namely, the spiritual element, "which was really quite a shame—Carl Jung attempted to keep it in in some ways—but it went secular. We had to think of the body as just a body and the mind as a brain . . . early psychology had to stay in a Western model: Newtonian, more Cartesian . . . Spirit was too much of a wildcard, they had to take it out."

The Academy uses firewalking, among other techniques, to teach people the transforming power of positive thinking. Expecting to hit a sore spot, I asked him what he thought of the argument made by skeptical physicists: that anyone with sufficiently moist feet who moves quickly enough can cross over the average bed of firewalk coals easily, without the slightest psychic preparation. Without missing a beat, Simmerman said, "If you can [watch] two hours of training in helping you to do something that is *perceived* to be impossible and then take that as a life-long metaphor, it serves its purpose. One of the phrases I love from a book by Tony Robbins is 'What would you do if you knew you couldn't fail?' and I put that on a 3×5 card and put it on my mirror and it reminds me: What kind of *self-imposed* limitations do I allow to restrict my satisfaction in life?" Physics doesn't alter the sense of self-overcoming that the firewalk participants feel. There may be no great victory over physics occurring, but there is a very real victory over fear.

In the End, Is New Mexico Merely a State of Mind?

Simmerman even had kind words for arch-skeptic Benjamin Franklin, who argued that the vaunted healing powers of early hypnotist Anton Mesmer amounted to nothing more than the power of suggestion. Exactly right, said Simmerman, and we should be all the more grateful to Monsieur Mesmer for reminding us of the power of the mind. "Hypnosis is probably the oldest healing modality known to mankind," said Simmerman. "You can go back to ancient Greek or ancient Egyptian sleep temples, where a priest or priestess would take someone mentally or physically ill, put them in a 'sleep' like a hypnotic trance and perform healing rites." Pain is always in some sense subjective, and meaningful rites can be powerful and effective things. "Jung said he'd never seen a client get better without a change in faith."

Patients who expect to feel better are more likely to do so, even when faced with continued physical ailments—the placebo effect. Improving one's mental outlook without altering physical symptoms may sound like a failure by some standards, but obviously it will be deemed a partial success by many patients. "The placebo effect can result in a fifty percent cure," as Simmerman put it, "and yet when we say 'placebo effect,' we pooh-pooh it!"

Simmerman makes an interesting point: Ironically, the mystics who claim that the mind can heal and their counterparts, the skeptics who claim that many apparent healings are all in the mind, are at times saying almost the same thing. And there, I thought, might be some common ground on which to resolve the historic struggle between mainstream and alternative medicine. We skeptics keep saying these alternative medicine practices are imaginary. The alternative medicine practitioners, if pressed, may agree with us, though they won't stop doing what they're doing. At that point, we may just have to go our separate ways. Or pay an occasional visit to Santa Fe. □

Faking UFO Photos for the Twenty-First Century

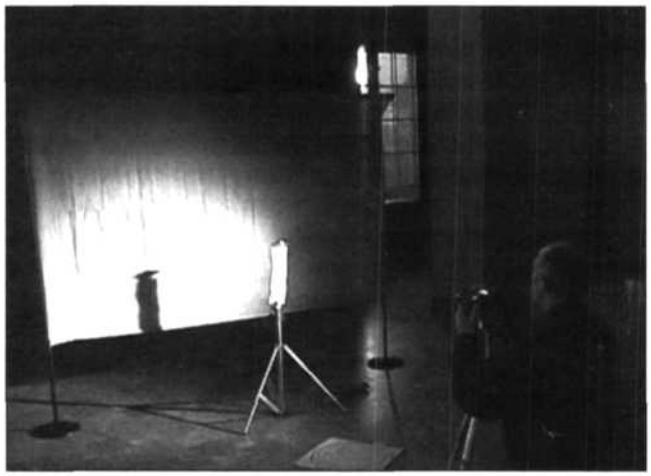
For a modern planetarium show, an astronomer/program producer created a variety of fake UFO images as a way of showing audiences how easily such photos can be done.

TOM CALLEN

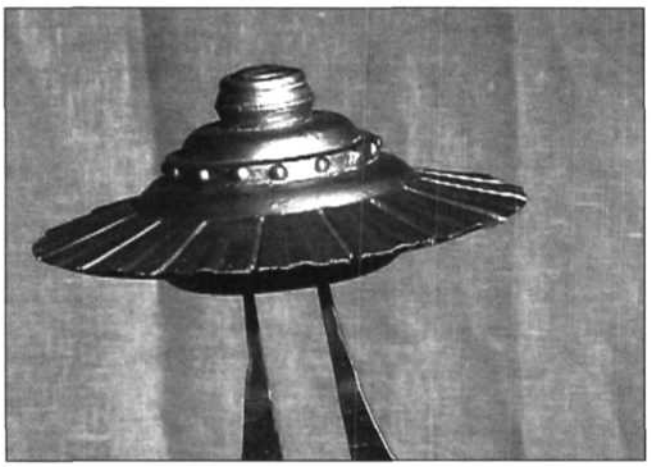
As the producer responsible for bringing Cosmonova's* latest public planetarium show, "UFO—The Truth is Here," to reality, I knew that one aspect of the UFO phenomenon that would be important to cover would be that of fake photographs. Ever since so-called flying saucers were first spotted in the 1940s, a variety of people around the world have created fake images that they claimed were authentic. The vast majority of these images have been exposed as the frauds they are. And yet even today there are those who continue this peculiar hobby. Rather than feature such photos as part of the program, I thought that the best example for our audiences would be to provide examples that were made

*Cosmonova, at the Swedish Museum of Natural History in Stockholm, is made up of an Omnitheatre with both a modern planetarium and a 70 mm-wide cinema.

Author Tom Callen aligns his 35mm camera during the photography of one of the UFO models. To capture as much detail in the models as possible it was necessary to get close to the models and try to fill the film frame. Image ©2001, Cosmonova



Cosmonova technician Olle Linder looks at one of the UFO models through the 35mm camera during photography. In the background can be seen the solid green cloth that was backlit by photoflood lights in order to get an even, uniform color that would help in "cutting out" the UFOs from the background of the final photographic prints. Image ©2001, Cosmonova.



One of the finished UFO models after photography against the green cloth background. You can also see the aluminum "fork" made by Olle Linder, one of Cosmonova's technicians, to hold the model on the tripod. This special mount allowed the UFOs to be turned in whatever direction was needed to get the best view of each model. Image ©2001, Cosmonova.

specifically for the show.

The first step was coming up with UFOs that would serve as my examples in these photos. Since it would not be visually interesting to show the same vehicle in every picture, I needed a variety of different models. Time constraints did not allow me to salvage together parts of different existing plastic kits, so I had to find another alternative. I located a small model company in California, Lunar Models, that makes unusual kits with a science fiction theme. They offer a series of resin-cast models based on "famous" UFO sightings.

Because the most appealing way to show these images was as 35mm slides projected in a montage, I bought seven kits from Lunar Models. Working with resin models was a challenging experience, like working with a model cast out of hard white soap. Each had surface imperfections treated with a hobby knife, sanded where needed, and then finished off with two coats of flat white primer spray paint. Any gluing had to be done with super glue-type adhesives and due to the variety of their compositions the model manufacturer couldn't guarantee results.

The final color schemes for the models were based on information about "actual" UFOs found on a Web site by a well-known UFO photographer, "Billy" Meier of Switzerland. To achieve a metallic luster for the models I used a special finishing compound over the white primer coats known as Rub 'n' Buff. I had used it nearly thirty years ago when I made models of military aircraft, and much to my surprise the company that made it was still in existence.

While working on the seven UFO models, I also took photographs that would become the background plates for the UFOs to appear against. In order to make the scenes more interesting I chose several well-known sites around the Stockholm area that would be easily recognizable. I also included scenes that showed everyday locations appropriate to the models and the concept.

Often fake UFO photos look too composed and without foreground objects in the images that would help to make identification possible. Both of these considerations were taken into account. For the background photos I tried to act as if I had been somewhere, looked up, saw something strange in the sky, and took a quick photo before the object disappeared. Foreground objects were also included in every image. This is most evident in the fake photo "taken" at Skansen, Stockholm's historic open-air park. More about that later on.

Just as important was how the background photographs themselves were taken. As each shot was made—with the same camera, lens, and film type—I also noted the date and time and used a compass to find the direction in azimuth that the camera was pointing at the time the photo was taken. All of this would be useful later in putting together the final fakes.

Once the background plate photos came back from the lab, they were scanned at high resolution and saved as JPEG-format files. Imperfections, such as dust and small pieces of hair on the photographic prints, were digitally removed from the

Tom Callen is Astronomer/Program Producer at Cosmonova, Swedish Museum of Natural History, Stockholm, Sweden. E-mail: tom.callen@nrm.se.

scanned images using a software program called Paint Shop Pro (PSP). Similar to Adobe Photo Shop, PSP would also be used to composite the final images together.

Before the completed UFO models could be photographed, I had to locate the Sun's position for each of the background plates. Since I already had the date and time that these photos were taken, it was a simple matter to use an astronomy program called Starry Night Pro to calculate both the altitude above the horizon and azimuth around the horizon for the Sun. This would allow the UFOs to have the same lighting and shadows as the real objects photographed in the background plates, thereby avoiding another common fake UFO attribute: mismatched shadows and lighting.

The UFO models were now ready for the "star treatment." We photographed them against a very large piece of solid green cloth that was lit from behind with photoflood lights so that the green would be an even color. One of our technicians at Cosmonova who helped me with the model shoot, Olle Linder, had once worked at Swedish Television as a lighting technician, so he was aware of this little detail to make the background as good as possible to make the final digital composition easier. This green acted in exactly the same way as the Chroma Key process (used in films and television) in order to separate foreground objects from their backgrounds and add in different backgrounds at a later time. In this case I was going to use this green color to "cut out" the UFO models and superimpose them in front of the background plate images. To aid in the background removal, the bracket and tripod head used to hold the models was also wrapped in a piece of the same green cloth.

Each UFO model was positioned after looking at a copy of the background plate that it was to be placed in so that it would have the most interesting attitude as far as the lighting in the scene was concerned.

The same camera, lens, and film type used to photograph the original background plate photos was also used to photograph the UFO models. This is a trick that Hollywood has used with much success in special effects-intensive films such as Woody Allen's *Zelig* and *Forrest Gump*. Hollywood cinematographers keep such good records of their shoots that it is often possible to go to these records and find out which type of lens was used to make a particular scene in a film. By using the same type of lens—and in some cases *the very same lens*—to shoot a modern actor against a Chroma Key screen, it is possible to digitally add an actor into another, older film. One famous example from *Forrest Gump* is the titular character receiving the Medal of Honor from President Lyndon Johnson in the White House. Since the UFOs were supposed to have been photographed flying over a particular landscape or location, it made sense to use this same Hollywood special effects trick.

To match up the relative positions of the Sun and the camera with respect to where the model was to go in the background plates, I made two very simple tools for measuring angles. The first was an enlarged copy of a 360-degree protractor to serve as an azimuth reference for placing the camera and light source in the correct position relative to the model sitting on the tripod before the green cloth background. The second tool was a variation of the enlarged protractor, but this one had only to be 180 degrees since I needed it only to determine the altitude above the horizon for our "sun," a bright photo lamp on an adjustable height light stand mounted on

A UFO seems to have suddenly appeared, flying right by the tower at Skansen in Stockholm. Note the horizontal motion blur that simulates the speed of the vehicle and the leaves that appear over the right end of the UFO. It is this sort of small detail that adds an extra sense of reality. Image ©2001, Cosmonova.

A UFO dips down so close to the water of Grönviken ("Green Bay") off the island of Rindö that its reflection can be seen on the surface. Fortunately the author had his camera ready as he stepped out of his house that morning. This image was the hardest one to create because of the need to get the reflection to look as real as possible. Image ©2001, Cosmonova.

This UFO model was based on those that were supposedly photographed by Californian George Adamski in the 1950s. It seemed to be the most appropriate choice to show over some of the antique buildings in Stortorget, Gamla Stan ("the Great Square, Old Town"), Stockholm, once the center of the capitol city. Image ©2001, Cosmonova.

A UFO "from" the Pleiades star cluster hovers over a pastoral scene northeast of Stockholm, Sweden. This photomontage is very reminiscent of the images made by Switzerland's "Billy" Meier. Image ©2001, Cosmonova.

Kaknästornet is the tallest building in Scandinavia, no doubt the reason for the interest of the alien craft flying over the Swedish Museum of Science and Technology (directly below the tower). Image ©2001, Cosmonova.

Aliens come to call at Stockholm City Hall on an overcast autumn day. This image was part of a three-part dissolve that started with just the City Hall background. The UFO was then added, finishing off with a colored panel running diagonally across the upper left corner containing the word *Stockholm*, turning the final view into a tongue-in-cheek souvenir post card to end the planetarium show sequence on fake UFO photos. Image ©2001, Cosmonova.

wheels. This enabled us to wheel the "sun" around to the correct azimuth and then raise it to the proper height above the horizon to duplicate the date and time of day that the background plate photo was taken.

When the photographic prints of all the UFO models came back from the lab, they too were scanned in at high resolution and cleaned up with PSP just as the background plates were earlier. The UFOs were then carefully "cut out" from the green background color by using a special selection tool in PSP that could be told what color to select and delete.

One of the simplest ways for investigators to determine if a UFO photo has been faked is to look for the wire, string, or thread that suspended the model. Unless the picture has been purposely copied many times to blur out fine details, photo investigative techniques can usually pick out the line running to the model. To avoid this give-away I decided that the final images would be digitally composited together in PSP by using its layering feature.

Another clue that a UFO may have been faked is that the UFO itself may be too sharp and well defined in the photograph when compared to other distant objects. Things at a distance appear to be a little fuzzy due to properties in the atmosphere (such as dust and moisture) so this too was taken into account.

I made a new copy of each background plate shot and then, one at a time, added in a particular copy of a cut-out UFO on another layer in the most realistic looking position. The size of each UFO was an important consideration since they also had to look believable; too large and the UFOs would look like models, too small and they would not look like anything interesting. But at the same time they also had to be far enough "away" from the camera to make the UFOs believable.

One image that received some special treatment was the so-called "grab shot" from Skansen. To make the final image seem more realistic, I made a copy of the part of the background plate that had some tree branches. I pasted this copy onto a separate layer in PSP, cleaned up the sky from all around the leaves and then sandwiched the UFO in front of the background plate, but behind the layer with the branches, which was aligned over their original position on the background. This made it appear that the UFO was physically passing behind the trees as it came around the Skansen tower. A little horizontal motion blur on the UFO made it look as if it was travelling at a fast speed, a little faster than the camera's shutter speed could record.

One of the hardest images to get right was the "Gulf Breeze" UFO that was seen passing so close over a large body of water (the bay in front of my house) that it reflected on its surface. This required making up multiple layers for the UFO that included a version that was mirrored, rippled, and faded in brightness to look as if it were the reflected image. To get this right I looked at a variety of photographs of water with real reflected objects, then achieved the result through trial and error.

The UFO planetary show's main character "Karl S. Andersson" (played by actor Fredrik Dolk) says, "With a camera, some models, a computer, and a painting software program anyone—with a little time and a little patience—can create impressive UFO photos that would fool just about anyone." Anyone, that is, except for those who investigate such seemingly incredible images and understand how easy it is to make them.□

A Clear, Sharp View of the Fuzzy Inkblot Test

TERENCE HINES

What's Wrong with the Rorschach? By James M. Wood, M. Teresa Nezworski, Scott O. Lilienfeld, and Howard N. Garb. Jossey-Bass, San Francisco, 2003. ISBN 0-7879-6056-X. 446 pages. Hardcover, $24.95.

The answer to the question asked in the title of the book under review here is simple: Pretty much everything that can be wrong with a test. Anyone who has even cursorily followed the Rorschach debate over the past years would be aware that the test is neither reliable nor valid. What readers of this excellent and comprehensive review of the history of (and literature on) this famous test will be surprised to learn is how truly terrible the Rorschach is and how shoddy the evidence is for its continued use. [See also the same authors' article "The Rorschach Inkblot Text, Fortune Tellers, and Cold Reading," SI, July/August 2003.]

When discussing a psychological test, or any test for that matter, the terms "reliable" and "valid" are frequently encountered. While being part of common parlance, they also have specific meanings in the technical language of psychological testing. A test (psychological or otherwise) is said to be *reliable* if the test gives approximately the same score on repeated testings, not taking practice effects into account. To the extent that a test measures a characteristic of an individual that is stable over time, the individual should get about the same score on repeated testings. A ruler that told me I was ninety-five inches tall today, two inches tall a week later, and fifty-six inches tall the next week would not be reliable. There are a number of different ways to measure reliability but, by general consensus, a test is considered reliable if the numeric measure of reliability (basically a correlation coefficient that can vary from 0 to 1) is about .80 or higher.

SCIENCE CONFRONTS THE CONTROVERSIAL INKBLOT TEST
What's Wrong with the Rorschach?
James M. Wood • M. Teresa Nezworski
Scott O. Lilienfeld • Howard N. Garb

Validity basically refers to whether or not the test really measures what it claims to measure. Let us assume that I have come up with the "Hines Specialized Psychological Test of Swimming Abilities" (HSPTSA). Let us further assume I have shown that this test is very reliable—test takers get almost the exact same score on repeated testings. Then I decide to determine whether the HSPTSA is a *valid* measure of swimming ability. I do this by giving 100 people the test and then tossing each person, one by one, into the deep end of a swimming pool. I measure how long it takes each person to swim to safety (or to drown). If the HSPTSA is valid, the higher the score on the test, the more quickly the individual should reach safety, and the less likely he or she should be to drown. If there is no relationship between test scores and measures of actual swimming ability, the test isn't valid. Again, by consensus, a validity coefficient of about .80 is generally required before a test is said to be valid. This example makes the point, often lost on my students, that a test can be perfectly reliable and totally invalid. But it doesn't work the other way. If a test isn't reliable, it cannot be valid. Before a test can be used in an ethical manner, it must be shown to be *both* reliable and valid.

As the authors of this book point out, the above description of reliability and validity represents a perspective on psychological testing that developed in the United States during the first half of the twentieth century. The tradition in Europe where the Rorschach was developed (Hermann Rorschach was Swiss) was very different. The European

Terence Hines is in the Psychology Department of Pace University, Pleasantville NY 10570-2799. A second edition of his book Pseudoscience and the Paranormal *was published by Prometheus this year.*

tradition was much more focused on the *interpretation of psychological tests using* the clinician's impressions and intuitions. There was little, if any, emphasis on checking to see if these intuitions and impressions were actually correct or not. It is this fundamental difference in approach to evaluating tests that frames much of the debate about the Rorschach. As such, the debate is similar to those often seen between believers in and skeptics of various paranormal phenomena who have fundamentally different standards for judging what constitutes evidence for a particular phenomenon.

One of the book's many strengths is the historical background it provides on the development of the Rorschach, Rorschach himself, and the debate about the test. This historical material greatly helps the reader to understand the test's origins and how it came to be accepted in the United States. Rorschach's book on his test, titled *Psychodiagnostics*, was published in German in 1921. It was not available in English until 1942. But news about the test spread through word of mouth among a few American psychology students in the 1920s and 1930s. The hotbed of Rorschach interest was at Columbia University in New York City. Proponents of the test made outlandish claims for its powers. For example, Bruno Klopfer, who was a research assistant in (Columbia University's) Anthropology Department claimed that "The Rorschach method does not reveal a behavior picture, but rather shows—like an X-ray picture—the underlying structure which makes behavior understandable" (48).

From within a fairly small circle of psychologists the Rorschach quickly grew in popularity, especially after World War II. This was due in large part to the increase in the number of clinical psychologists trained following the war. Almost as soon as it emerged, however, the test was subject to increasingly harsh criticisms from psychologists with more American psychometric approaches to testing. They had learned the importance of reliability and validity from the *disastrous use of intelligence tests in the* early part of the twentieth century that had been neither. The authors note that the response of what they term the "Rorschach culture" to such criticisms was not to engage in careful empirical research to support their claims, but instead to proclaim that their skills in "clinical judgment" obviated the need for such research, and to belittle calls for evidence of reliability and validity. Again, the actions of the Rorschach proponents mirror the actions of believers in other pseudoscientific claims.

Though proponents of the Rorschach were uninterested in doing research to validate the test, others—who thought that the test might have some redeeming features—conducted a great deal of such research. An extremely interesting chapter is devoted to this research. What emerged out of the welter of different Rorschach scores was that a few were, in fact, correlated with a few psychological variables. The authors cite three relationships that are well established. Quite a few Rorschach scores are moderately correlated with intelligence. Psychotics and schizophrenics differ from normals on a few variables. Children's responses differ from those of adults. These are not terribly surprising or useful findings.

By the 1960s, the Rorschach was rapidly losing popularity. The decades of negative research was taking its toll. But an amazing turn-around took place in the 1970s due almost entirely to the work of one man, John E. Exner. Exner developed what he termed the Comprehensive System for scoring the Rorschach that was supposed to provide users with a method of scoring that yielded acceptable levels of reliability and validity. In his several books on his system Exner described over one thousand studies done by himself and others at his "Rorschach Workshops" between 1968 and 1990 that established the psychometric utility of the numerous different scores that Exner had created. The reaction to Exner's system can be summarized by the title of one of the sections in the chapter devoted to it: "Praise and *Popularity: The Comprehensive System* in the 1980s and 1990s."

But the praise has not survived a critical examination of the claims that Exner made. The references to the numerous studies Exner and his colleagues have done reveal that the vast majority of them have never been published or, apparently, even written up in manuscript form. This is no trivial matter. For a study to be published in a scientific journal, it must go through peer review, in which other experts on the paper's topic examine the methodology used to ensure that it is proper. It is obviously impossible for an interested reader to learn the vital details of procedures used when a study remains unpublished and unavailable in manuscript form. One simply has to take the researcher's word for it that the studies were done properly.

To make matters worse, Exner has a history of refusing to share his data with other researchers. This is a direct violation of ethical standards in science. The book's authors repeatedly asked for copies of data from several studies, offering to pay all expenses involved. The data were never provided. Increasing the suspicions about the adequacy of Exner's data collection and analysis techniques, specific results of experiments Exner reports change "inexplicably from one book to the next. They sometimes changed even within the same book" (220). At best this suggests extremely sloppy editing of the reports. It is just this type of problem that peer reviewed publication avoids.

In one instance the authors asked Exner for what is termed the "normative data." Norming is an extremely important aspect of test construction. Before you can interpret a test score, you have to know what the normal distribution of scores in the population is. It doesn't tell you much if you know that so-and-so got a 147 on a test of memory. Is that good? Bad? Normal? To answer this question, you must compare that score to norms that have been published with the test. Only with correct norms can test scores

be interpreted correctly and appropriately. Exner refused to provide the data on his 700 normative subjects, saying that the data "have been analyzed and reanalyzed several times and it seems extremely unlikely that data errors" would be found (248). But there was a problem with the normative data. It turned out that the normative sample didn't consist of 700 subjects. There were only 479 subjects, with the data from 221 of them entered twice! This is a huge error that somehow went unnoticed for years in spite of several alleged analyses.

As the 1990s progressed and other psychologists looked more closely at the Exner system, it began to, in the authors' words, "unravel." First, claims about the relationship between specific scores and various psychological variables were not supported by independent, published studies. For example, the Exner system was said to be able to detect depression. But "out of fourteen attempted replications, eleven found no significant relationship between the Depression Index and diagnosis of depression, two reported mixed results, and only one yielded unmixed positive results" (245).

It was noted above that the great majority of scores generated by a Rorschach are invalid. This does not necessarily mean that the test simply generates random results. In fact, one of the most serious problems with the Rorschach, especially with Exner's system of scoring, is that it significantly overpathologizes—it classifies as psychologically disordered a large percentage of individuals who are normal. Since the test has been *and continues to be* widely used in such vital decisions as which parent gets custody of a child, whether a child has been sexually abused, whether a prisoner should be allowed out on parole, etc., it is hard to overemphasize the seriousness of this characteristic of the test. Specifically, "Research suggests that the Comprehensive System misidentifies about 75 percent of normal individuals as emotionally disturbed" (259). This is an absolutely horrendous result. Imagine a test for some type of cancer that classified 75 percent of people who were cancer free as having cancer. No ethical practitioner would even consider using such a test, let alone publicly advocating its continued use. In fact, Gregory Meyer, a proponent of the Comprehensive System, actually claims that it can "predict the occurrence of cancer" (244).

One would hope that even proponents of the Comprehensive System would be taken aback by the findings and make some attempt to deal seriously with the criticisms raised. Nothing of the sort has taken place. Adopting a head-in-the-sand approach, they simply continue to pronounce that the System is doing fine. The authors write: "The defenders of the Comprehensive System have yet to address several grave issues. . . . For example, what are psychologists' legal and ethical obligations towards patients who may have been misidentified as pathological by the Exner norms during the past fifteen to twenty years? What is the status of legal cases in which the Rorschach and its flawed norms have played a role? Published articles by Exner and his closest colleagues do not even acknowledge that these problems exist" (243).

In a particularly bizarre turn of events, the Society for Personality Assessment, a strongly pro-Rorschach group, actually has a position for an "Assessment Advocacy Coordinator," basically a paid lobbyist whose job it is to defend the Rorschach from criticism.

One important question is why, given the overwhelming evidence that the Rorschach is essentially useless, some psychologists continue to believe so strongly that it reveals important aspects of personality. Wood et al. discuss this issue at some length, and the answer will not be surprising to SKEPTICAL INQUIRER readers. Psychologists continue to believe in the Rorschach for the same reasons that Tarot card readers believe in Tarot cards, that palm readers believe in palm reading, and that astrologers believe in astrology: the well-known cognitive illusions that foster false belief. These include reliance on anecdotal evidence, selective memory for seeming successes, and reinforcement from colleagues. So, again, the parallel between the Rorschach and other pseudoscientific and paranormal beliefs is clear. There is also a financial interest at work here. If the proponents can convince others that the Rorschach is a legitimate psychological tool, then third-party payers will pay for Rorschach interpretation. This is not a trivial sum; given the time involved, the charge would be around $350.

The great majority of scores generated by a Rorschach are invalid. In fact, one of the most serious problems with the Rorschach is that it classifies as psychologically disordered a large percentage of individuals who are normal.

The authors see the use of the Rorschach in the courts, whether in custody cases, parole issues, or other types of cases, as particularly problematic. To this end, they have included an especially important chapter specifically addressing the legal implications of the Rorschach. This chapter will be of great interest to lawyers and judges who have to deal with Rorschach-based evidence and testimony.

This book should put to rest any question about the usefulness of the Rorschach. It won't, of course, convince

the true believers. Just as there will always be proponents of cold fusion, biorhythm theory, and phrenology, so there will always be proponents of the Rorschach. But it is now time for professional programs in psychology and related disciplines to cease training their students in the use of the test, and it is time for practitioners who care more about ethics and the welfare of their clients than remuneration to cease using the Rorschach.

I must end with one mildly critical note. The citation system used by the authors is needlessly cumbersome. In the body of the text, citations are indicated by a superscript number. If one wants to find the source noted in the text, one first has to go to the notes section at the end of the text and find the corresponding number. There one finds not the full reference, but the name(s) of the author(s) and year of publication of the paper. One then has to go to the separate reference list to find the specific publication details. It would have been much easier for the reader (and would have saved about thirty-five pages of print) if the authors had used the standard "name and date" citation system in the text. Substantive notes could still have been indicated by numbered superscripts.

A Nuanced Biography of a Tragic Figure in Science

GREG MARTINEZ

Love at Goon Park: Harry Harlow and the Science of Affection. By Deborah Blum. Perseus Books, Cambridge, Mass., 2002. 336 pp. Hardcover, $26.

One of the most indelible images from the history of psychological research is that of a baby rhesus monkey clinging to its cloth surrogate mother. This famous photograph from an issue of *Life* magazine published in the 1950s represented the groundbreaking work of researcher Harry Harlow into the nature and importance of affection in psychological development. While the photograph and the research it depicted has gone on to widespread fame and acceptance, Harlow himself has disappeared into a mostly forgotten past, where the only people keeping his name alive are animal rights activists and feminists who hold him up as an example of all that is wrong with modern science.

Deborah Blum's *Love at Goon Park: Harry Harlow and the Science of Affection,* provides an excellent overview of Harlow's monumental and iconoclastic research into love and human development, mixing science writing with an intelligent, nuanced, and thoughtful biography of a subject who—while a great success as a scientist—was a tragic failure in his personal life. It does much to rehabilitate the reputation of a scorned scientist whose research destroyed much of the edifice of accepted psychological theory during the first half of the twentieth century.

Harry Harlow was born Harry Israel in Iowa on Halloween night 1905. He was an oddball child, his bookishness and poetry out of step with his surroundings on the prairie earth. To further himself from his modest upbringing, he went the unusual step of attending college outside the Midwest, majoring in psychology at Stanford. He was a celebrated student, but found difficulty gaining a faculty appointment at a university because of his last name. Raised a Presbyterian, Harry was only one-sixty-fourth Jewish, but the anti-Semitism pervasive in America at that time thwarted his attempts at employment. After he changed his name to Harlow (a family name), a position was quickly offered at the University of Wisconsin.

After securing this appointment, Harry embarked on a career doing lab research typical of the time: intelligence testing on rats (he called it "rodentology"). His distaste for that kind of research led him to explore the emerging field of primate studies, the then-novel use of animals most closely associated with humans to study human behavior. Harlow developed his theories regarding the primacy of affection in development the way many scientific insights occur: by accident. In the 1950s, the supply of primates from India and Africa was notoriously unreliable, with monkeys routinely arriving sick or dying. Harry decided to create his own breeding colony, building his facilities from an abandoned box factory near the UW campus, and using the labor of volunteers from the football team who wanted extra credit to bolster their grades in his classes.

After their births, Harlow and his assistants would separate the infant monkeys to their own incubators and tend to them with warm nesting materials and regular feedings. Despite this attention, some monkeys would still wither away and die, and those that survived were incompatible with other monkeys when introduced to the already existing community. Thus sparked the insight into the possible importance of mothering in the developing brain of an infant.

What may seem obvious to us now, Blum reminds us, was as counter to the conventional wisdom in psychology in those days as Galileo's ideas were to the astronomy in his day. Blum devotes a

Greg Martinez lives and writes from Gainesville, Florida. E-mail: martineg66@yahoo.com.

great deal of her book to putting Harlow's revolution into a strongly detailed context. The field was dominated by the behaviorist theories of psychologists like B. F. Skinner and child development theories exemplified by John Watson, who used his presidency of the American Psychological Association to conduct a personal crusade against cuddling children.

Harlow's carefully executed and presented research sent shockwaves through the psychology community, eventually discrediting behaviorism and many other -isms under the extraordinary force of the information he collected. His voluminous hard data replaced what previously had been anecdotal evidence in fledgling schools of thought, providing a much-needed scientific basis for theories like attachment theory, humanistic psychology (Abraham Maslow was his first graduate student), and patient-centered therapy.

In spite of such estimable success, Harlow was a difficult person to work with, and harder to be involved with. His first marriage ended in divorce, and his workaholic ways estranged him from his two sons. He eventually married a fellow researcher, but her life was cut short when she died of breast cancer at fifty-two. After her death, Harlow descended into a high-functioning alcoholism, succumbing to a profound depression that was treated with shock therapy. This depression led to his most controversial, and cruel, experiment, using vertical chambers to create a state of isolation and depression in monkeys. After the monkeys fell into a despairing state, various methods were tested to resocialize ("cure") them, none of which were entirely successful. This set of experiments was particularly hard on the researchers running them. The cloth and wire mothers and many other artifacts from Harlow's lab are preserved in a museum on the UW campus, but those chambers were promptly dismantled and destroyed after the experiment.

Blum skillfully charts Harlow's brave ascent in the scientific world, and his sad descent as his difficult personality ran afoul of the feminist movement when his work was condemned as an example of oppressive male patriarchy subjugating women to conform to traditional mothering roles (misinterpreting the data and ignoring the scores of women researchers who earned their doctorates under Harlow's tutelage). Rather than address these issues with cool logic and professionalism, a depressed and exhausted Harlow responded with sarcasm and insult, further dooming him to marginalization through the intemperateness of his remarks.

Harlow died in 1981, but would be resurrected time and again by the rising animal rights movement as a representative of unscrupulous and cruel research. Lost in their accusations was the fact that one of the guiding rules of Harlow's research was to never create a condition in an animal unless the purpose was to explore methods for treating the affliction. Deborah Blum's biography is a careful and fair rehabilitation for an unjustly neglected figure in science. She writes an absorbing character study mixed with equally absorbing science writing, delivering a powerful and moving science book.

Questioning the Foundations of Psychology

PETER LAMAL

Psychomythics: Sources of Artifacts and Misconceptions in Scientific Psychology. William R. Uttal. Lawrence Erlbaum Associates. Mahwah, New Jersey, 2003. ISBN 0805845844. 208 pp. Hardcover, $22.50.

William R. Uttal's twentieth book on scientific psychology is concerned with what he dubs *psychomyths*, which are mistaken ideas about the nature of "mind-brain" (as he puts it) and its relationship to the neural substrate that produces it. Uttal says that psychomyths "arise out of a multitude of misinterpreted experiments, leaps of logic, fallacious assumptions, ignored caveats from other sciences, and misunderstanding of the limited power of the tools that are used by psychologists. . . . They also arise out of extrascientific approaches to the study of behavior or mind that impact on and distort scientific findings" (ix). His view is that psychomyths permeate contemporary psychology, and he notes that the area most susceptible to psychomyths is the "huge industry" (x) of psychotherapy.

Uttal's purpose in this book is to analyze descriptions of cognition and its determinants, as well as the errors surrounding its study. He defines *cognition* as all of the mental processes associated with observable behavior. But what, one may ask, are mental processes? Here Uttal sidesteps the issue. He says that he is deliberately avoiding the trap of trying to specifically define such mentalist terms as *mind, cognition, perception*, and other closely related mentalistic terms. Rather, he says that he uses these terms "in the general sense that all psychologists and for that matter, all human conversants do" (15). But what is that general sense? We are not told. Instead, each of us is to use the denotative and connotative

Peter Lamal is emeritus professor of psychology at the University of North Carolina at Charlotte and a Fellow of the Division of Behavior Analysis of the American Psychological Association. E-mail: plamal@carolina.rr.com.

meanings of these terms with which we are most comfortable. Hmmm.

Uttal lists ten categories of sources of psychomyths, and the rest of the book is an exploration of the categories and a description of their pernicious and prevalent influence on psychology. Uttal's examples are drawn primarily from studies in psychophysics and perception, but his critique is clearly relevant to all of contemporary psychology.

The Endogenous-Exogenous Confusion refers to the mistake of attributing some perceptual phenomena to internal processes that are actually due to exogenous events, that is, events occurring in the external environment. Uttal's position is eclectic; perception is an interaction between processes occurring outside of us as well as inside us. But psychology has made a serious mistake with respect to the latter. Mental processes, Uttal maintains, are for all practical purposes inaccessible to scientific examination and analysis. "It may be an unavoidable fact that any cognitive, mentalist, rationalist approach is limited to identifying the transformations that take place and describing the course of those endogenous transformations without ever being able to explain the exact mechanisms and processes that account for them" (25). This inaccessibility is fertile ground for the generation of psychomyths, as illustrated by the history of psychology as well as today's regnant cognitive psychology.

And mathematics is not the solution. Uttal points out a number of times that mathematics is "neutral" with regard to underlying processes. It is an excellent tool for description but, contrary to the view of some psychologists, it cannot provide explanations of the inner workings of such complex systems as humans. And the complexity of humans is something that is emphasized throughout this book. Complexity, interaction, and nonlinearity are fundamental properties of neuronal systems and the behavior they generate.

In psychologists' rush to collect data, test for statistical significance, and generate hypothetical constructs, a number of fundamental questions are usually overlooked.

Measurement is of central concern to scientific psychology, and as Uttal shows, it is often fraught with difficulties. In psychologists' rush to collect data, test for statistical significance, and generate hypothetical constructs, a number of fundamental questions are usually overlooked. For example: What can we measure? What exactly do we mean by the term *measure*? Do physics and psychology operate by the same laws of quantitative measurement? A fundamental problem is that the formal education of psychologists does not include sufficient admonitions and warnings about the use of statistics to prepare them for the situations in which errors of statistical interpretation can occur.

Beyond these methodological issues, psychology is beset by erroneous assumptions and conceptual errors. Some of these assumptions have led to incorrect conclusions about the causes of mental phenomena and the properties of cognitive activity. Much psychological controversy, Uttal maintains, is rooted in attempts to reify nonexistent entities and processes that emerge from theories based on such erroneous assumptions and conceptual errors. Among them are the false assumptions of analyzability and of the accessibility of mental processes. There is, says Uttal, no more contentious assertion in psychology than that mental processes are inaccessible to even the best designed tools. "The position taken regarding this particular foundation assumption is the key differentiating factor between modern behaviorism and cognitive mentalism. It is also the single most important factor justifying the enormous human expenditure of time, energy, and money spent on most kinds of psychotherapeutic procedures" (150).

In addition, Uttal discusses classic scientific assumptions that may not serve psychology well. Among them are the principle of parsimony and the method of analysis. Other assumptions to be avoided are the equating of necessity with sufficiency and analogy with homology. And assumptions of cognitive modularity, linearity, and simplicity have led to erroneous conclusions.

This book is not light reading, particularly for the nonspecialist. Better copyediting was needed; the reader is jarred by occasionally missing or misspelled words. But Uttal raises very important questions and considers issues that are important if we are to avoid or eliminate the myths that plague psychology. Uttal accurately characterizes his book as "iconoclastic." And it is densely packed, with critical issues and questions being raised or discussed on every page.

An Elegant French Guide to Pseudoscience

NEIL INGLIS

L'Imposture Scientifique en Dix Leçons. By Michel de Pracontal. Editions La Découverte, Paris, 2001.
ISBN 2-7071-3293-4. 336 pp.

Roughly translated, the title of *L'Imposture Scientifique en Dix Leçons* means "Pseudoscience in Ten Lessons." This is a fine guide to critical thinking for college students and concerned citizens in the French-speaking world— but don't let that deter you! Many of our old adversaries put in an appearance: Ingo Swann, Charles Panati, Geller, Puthoff, and Targ all get mentioned in the space of one single page.

This is no mere attack on the usual suspects. The author goes beyond pseudoscience to tackle the gray areas of scientific self-delusion. Cold fusion is one example, along with lesser-known stories plucked from the scientific hall of fame (including early geneticist Gregor Mendel, whose assistants may have doctored his research results for him).

The author is not afraid to batter sacred cows. He is particularly severe on the late Hungarian author and psi-dabbler Arthur Koestler ("In biology as in history, Koestler tended to move closer to zero than to the infinite").

De Pracontal casts his eye on scientists and New Age gurus alike. He reserves particular scorn for Rupert Sheldrake, a man with a foot in both camps ("Sheldrake uses obscure turns of phrase and terminology to cloak his arguments in a fog to conceal how humdrum they are"). Last but not least, the author excoriates the peer review process; it is too kind to the Sheldrakes of this world and lets through too much dubious research. Remember the notorious 1988 *Nature* paper on "remembering water" by Jacques Benveniste?

Michel de Pracontal is a distinguished French science journalist whose career hit high gear during the French blood-screening scandals of the 1980s. On this subject his material is first-hand and first-rate. De Pracontal describes Robert Gallo (then with the National Cancer Institute) with a mixture of admiration and annoyance, viewing him as a charming but cold-blooded operator ("Rather than modify his initial hypothesis, Gallo vainly sought to twist the facts to fit his spurious theory").

Other paranormal purveyors come across in a new and unflattering light, seen from de Pracontal's European vantage point. Uri Geller's talk-show screw-ups weren't limited to Johnny Carson and *The Tonight Show.* In *L'Imposture Scientifique* we observe the spoon-bender caught *in flagrante,* trying to fob off an especially lame golf-club trick on a hapless TV audience.

De Pracontal never descends to the anecdotal; he always imposes a rigorous schematic framework on the many tall tales from the world of psi. He is at pains to identify general principles which young students of critical thinking can then apply to new and unfamiliar situations. De Pracontal points out, rightly, that there are recurrent patterns in any New Age controversy, and a consistent cast of characters. Psi practitioners are most assured of success if they seek to mine an inexhaustible fount of human phobia (the fear of death is the obvious example). And that, of course, is why CSICOP will have its hands full debunking phony cancer cures for decades to come.

De Pracontal writes in elegant French (Randi is "le stupéfiant Randi"), and his role in the blood-screening scandal shows his distinctively European take on skeptical controversies. But along with Gallic logic comes a candid admission that the French education system, with its top-down approach, may not be best equipped to train students in CSICOP-style skeptical thinking. The "experimental and empirical approach of the Anglo-Saxon" world has its advantages. And touchingly, he praises the late Stephen J. Gould, especially those "delightful essays at which Gould excelled."

Paradoxically, de Pracontal does not always pursue his arguments to their logical conclusion. For instance, he overlooks the sheer ingratitude and indifference of the psi community in the face of the real miracles of the natural world. As I read his descriptions of polywater and "remembering water," I wondered aloud, "Why aren't these New Age folks grateful for the genuinely wondrous properties of water without which we would not be alive today?"

Still on the subject of water, de Pracontal reminds us of some parapsychologists who have passed on to the next world. I had forgotten all about John Lilly and his "isolation tanks" from the 1970s. Sensory deprivation? A good night's rest will achieve the same result. Warren Carey, scourge of the plate tectonics theory and author of *The Expanding Earth* (1976), is a further addition to the pantheon of poppycock.

CSICOP itself gets a nod; and Ned Feder, Walter Stewart, and Paul Kurtz are but three of the many skeptics mentioned, along with plenty of rationalists who were fighting the good fight in the pre-CSICOP era. The campaign for critical thinking has acquired a worthy new textbook (it would be better still if it had an index). And thanks to its insights, psychic con artists in the French-speaking world will shortly confront a hostile and skeptical younger generation. □

Neil Inglis is a translator and author in the Washington, D.C., area, and a member of the National Capital Area Skeptics. Inglis can be contacted at ninglis@erols.com.

An Old Refutation of Divining

STEVEN ABBOTT

In sixteenth-century Germany there was a flourishing mining industry. Finding new veins of metallic ores was of great importance. But the understanding of why the earth contained such veins was confused by two important schools of thought. The alchemists produced acres of alchebabble that sounded profound but said nothing useful. And there was a strong academic school of thought that said that God had hidden metals underground because they were intrinsically infernal and should remain there undisturbed.

So it was quite a surprise to find Georg Bauer, Latinized as Georgius Agricola, in 1556 filling a whole book, *De Re Metallica*, with solid descriptions of the practicalities of finding valuable veins of ore and mining and processing them efficiently. His whole approach comes across as modern and scientific. He was frequently wrong about his science, but that was because of poor data rather than a lack of good method. Even more surprising is that the book is available[1] in a wonderful English translation by President Herbert Hoover and his wife, Lou.[2] There are many reasons for reading this marvellous book, but I was especially delighted to come across one particular treasure in its pages.

It was common to find diviners with their forked sticks trying to identify rich seams. So what did Agricola think of their technique? There's no better answer to that question than to quote from the book. His old refutation of divining is skeptical in the best sense and is a reminder that the battle for truth over mumbo-jumbo is as old as the hills of the German mining regions.

Agricola gives a clear and instantly recognizable description of the divining process with twigs (usually hazel): "All alike grasp the forks of the twig with their hands, clenching their fists, it being necessary that the clenched fingers should be held toward the sky in order that the twig should be raised at that end where the two branches meet. Then they wander hither and thither at random through mountainous regions. It is said that the moment they place their feet on a vein the twig immediately turns and twists, and so by its action discloses the vein; when they move their feet again and go away from that spot the twig becomes once more immobile."

Agricola spots a problem with the technique. If it's the twig that is doing the detecting, how come it doesn't work for everyone? The answer given by the proponents is: "if the rod does not move for everybody, it is due to unskilled manipulation or to the impeding peculiarities of the man which oppose and resist the force of the veins." The "impeding peculiarities" are likened, by the proponents, to the "fact" that garlic "weakens and overcomes the strength of a magnet."

Agricola goes on to say that "Since this matter remains in dispute and causes much dissension amongst miners, I consider it ought to be examined on its own merits." He dismisses the defense that divining is a bit like the attraction of magnets, using the

President Herbert Hoover's translation of an old Latin text on mining provides a wonderful critique of the belief that rod divining is of any use.

Professor Steven Abbott is a research scientist working in the UK and a Visiting Professor at the University of Leeds. Address for correspondence: 7 Elsmere Road, Ipswich, Suffolk IP1 3SZ.

straightforward argument that magnets attract things in straight lines: "... wherefore since this is not the case [in divining], it must necessarily follow that the manipulation is the cause of the twig's twisting motion. It is a conspicuous fact that these cunning manipulators do not use a straight twig, but a forked one . . . so that if it be held in the hands, as they are accustomed to hold it, it turns in a circle for any man wherever he stands. Nor is it strange that the twig does not turn when held by the inexperienced, because they either grasp the forks of the twig too tightly or hold them too loosely."

He finally comes to the crunch. Does divining really deliver the goods? "... veins are discovered by the use of twigs, because whilst using these they do accidentally discover some; but it more often happens that they lose their labour, and although they might discover a vein, they become nonetheless exhausted in digging useless trenches than do miners who prospect in an unfortunate locality. Therefore a miner, since we think he ought to be a good and serious man, should not make use of an enchanted twig, because if he is prudent and skilled in the natural signs, he understands that a forked stick is of no use to him for, as I have said before, there are the natural indications of the veins which he can see for himself without the help of twigs."

It's sad that 450 years later we still have to go over similar arguments with those who believe that divining works. I find that Agricola's example is a useful new way for discussing the issues. He only cared for results, and would have had no reservations about using divining if it really worked. Modern skeptics can be accused of attacking divining simply because they don't like their world view being challenged by something that does not fit with it. Agricola lived at a time when divining was no real threat to any worldview. For him the matter was simple: Divining just didn't work as advertised. It didn't then, and it doesn't now. It's as simple as that.

Notes

1. Hoover H.C. (Trans), Agricola, Georgius, 1950 [1556]. *De Re Metallica.* Dover Publications.

2. Both Hoover and his wife were expert mining engineers with an obvious love for Agricola's book. The footnotes alone are worth the modest cost of the book, which is readily available from online bookstores. The translation was in 1912, some time before Hoover became a major political figure. □

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Articles: Articles may be evaluative, investigative, or explanatory. They may examine specific claims or broader questions. Well-focused discussions on scientific, educational, or social issues of wide common interest are welcome. We especially seek articles that provide new information or bring fresh perspective to familiar subjects. Articles that help people find natural explanations of unusual personal experiences are useful. So are articles that portray the vigor and excitement of a particular scientific topic and help readers distinguish between scientific and pseudoscientific approaches. Well-balanced articles that report on and evaluate controversial scientific claims within science itself are also needed.

The SKEPTICAL INQUIRER must be a source of authoritative, responsible scientific information and perspective. The Editor will usually send manuscripts dealing with technical or controversial matters to reviewers. The authors, however, are responsible for the accuracy of fact and perspective. It is good practice to have knowledgeable colleagues review drafts before submission. Reports of original research, especially highly technical experimental or statistical studies, are best submitted to a formal scientific journal; a nontechnical summary may be submitted to the SKEPTICAL INQUIRER. Studies based on small-scale tests or surveys of students will be considered only if they establish something new, provide a needed replication of some important earlier study, or test some new theoretical position.

Space is at a premium. Many accepted articles are always awaiting publication space, and many submitted articles cannot be published. Articles are typically 1,800 to 3,500 words (about 8 to 12 double-spaced typewritten pages). Longer manuscripts will be returned. Articles should be organized around one central point or theme. Be succinct. Remember, Watson and Crick's paper reporting the discovery of the structure of DNA took just over one page in *Nature*.

Articles should have a title page. Begin with a succinct, inviting title followed by a concise, 20- to 30-word statement of the article's main point or theme. This "abstract" will be published in display type on the first page of the printed article and used as a summary on the Contents page. The title page should also give the name of the author(s), full addresses, and the lead author's office and home telephone numbers, fax number, and e-mail address, and a word count. At the end of the manuscript, include a suggested author note of one to three sentences that gives relevant affiliations and credentials and an address for correspondence. If you do not want your address included in the author note, please say so. The manuscript should be accompanied by a brief cover letter stating that the article has not been submitted elsewhere and providing any other essential background for the Editor.

Book Reviews: We seek reviews of new and recently published books. You may query the editor first. Most book reviews are about 500 to 1,000 words. Include publication data at the top of the review in this order: *Title. Author. Publisher, city. Year. ISBN. Number of pages. Hardcover or softcover, price.* Include a suggested author note and full author contact information.

News and Comment: News articles from 250 to 1,000 words are welcome. They should involve timely events and issues and be written in interpretative journalistic style. Use third person. The news sections of *Nature, Science, New Scientist,* and *Science News* are excellent models. Balance, fairness, and perspective are important. In reporting on controversies, seek and include comment and perspective from the various opposing parties.

Forum: The Forum column consists of brief, lively, well-written columns of comment and opinion generally no more than 1,000 words. Space allows only one or two per issue.

Follow-Up: The Follow-Up column is for response from persons whose work or claims have been the subject of previous articles. The original authors may respond in the same or a later issue.

Letters to the Editor: Letters to the Editor are for views on matters raised in previous issues. Letters should be no more than 225 words. Due to the volume of letters received, they cannot be acknowledged, and not all can be published. Those selected may be edited for space and clarity. Authors criticized in the letters column may be given the opportunity to respond in the same issue.

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Text: All manuscripts should be printed out double-spaced, including notes and references, on 8-1/2" x 11" white opaque paper with at least one-inch margins on all sides. Number all pages in sequence, including those for references, figures, and captions. For Articles, submit an original and two photocopies (for reviewers); for other categories, an original and one photocopy. In either case, we also request the document on a computer disk, which should generally be submitted at the same time.

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Smith, John, Jane Jones, and J.T. Thompson. 2001. *A Skeptical Book.* New York: Jones Press.

Sample journal-article entry:

Smith, John, Jane Jones, and J.T. Thompson. 2001. A skeptical article. *The Journal* 5 (1): 7–12.

Use endnotes (not footnotes) for explaining or amplifying discussions in the text.

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SKEPTICAL INQUIRER
944 Deer Dr. NE
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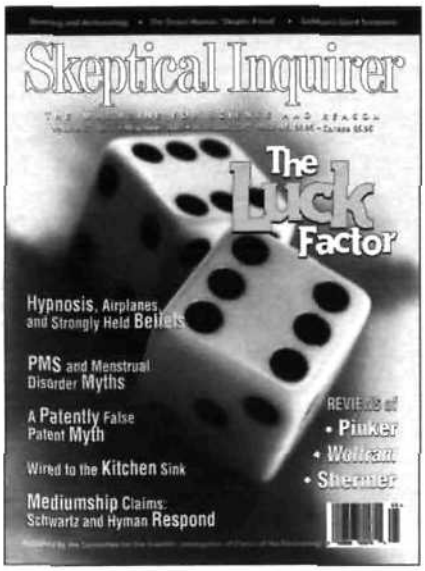

Labor of Luck

Richard Wiseman's article "The Luck Factor" *(May/June 2003) was extremely interesting. I* would like to add my two cents. Luck, or as Wiseman points out, picking up on fortuitous coincidences, is a matter of seeing what is available at a given time and in given circumstances. That is, of being alert to patterns of possibility. There are two aspects of this. The first is having a knowledge of the patterns, and the second is being open to recognizing them as they occur. The first is a matter of learning, but the second is more related to detachment. As Louis Pasteur is reputed to have said, "Fortune favors the prepared mind." We place much emphasis on the learning aspect of preparation, but very little on the other aspect, on maintaining a detached point of view that, at the same time, allows a question of concern to be present in the mind as something that can act to organize perceptions of opportunity, rather than fixate attention on the concern itself.

Burton Voorhees
Edmonton, Alberta
Canada

Kudos to Richard Wiseman for his scientific elucidation of luck ("The Luck Factor," SKEPTICAL INQUIRER *May/June 2003). How*ever I was a little surprised that he didn't acknowledge the pioneering work of Dale Carnegie, who brought "positive thinking" to the world and made a great deal of money showing people exactly how to change their luck using essentially Wiseman's techniques (of course, I haven't read his book). Wiseman basically provides scientific evidence for efficacy of positive thinking techniques.

Dave Zook
dzook@paonline.com

I am having trouble comprehending the suggestion that to increase one's luck, one should make new friends and try out new experiences. Apparently the author has lived in the same place for years, and has clients who have also done so. When one lives in the some place for a long time, habits become entrenched, and it takes the shock of new experiences to blast a person out of his well-*established ways of doing things, possibly* increasing the person's luck. (Mother Nature uses a similar system with chance mutations to improve the lives of living organisms. With no new ideas, or genes, there is no change good or bad. When some changes are tried, a few of them turn out to be improvements.) I salute him for improving the lives of people who desperately needed changes for the better, but what about people who move every few months? For them, new experiences are the last thing they need. If you don't even know the street names, you are not going to be in search of new experiences. Only after one has been in place a couple of years, having learned the local geography, climate, customs, speech impressions, stores, school system, neighborhood politics, educational system, medical care, etc., can one "improve one's luck" by trying new experiences. The last thing a transient or a short-term resident needs is new experiences! We are overloaded with new experiences already, and cannot assimilate any more. Can the author address the problem? . . .

Elin Larson
Purcellville, Virginia

The delightful article on the "Luck Factor" reminded me of some classic demonstrations of "superstitious" behavior in rats. An animal behaviorist I knew used to demonstrate this in laboratory rats that were previously shaped to the Skinner box procedures. Minimum rewards were doled out at totally random intervals, yet many of the subjects developed curious repetitive actions. Some of these were as obvious as circling and nipping tails, while some were more subtle, like nose-rubbing or sniffing a particular corner of the cage. In all cases, the "superstitious" actions were slight departures from normal activities, but could, in some subjects, become quite exaggerated. It may have taken only a few chance coincidences of an action with a "reward" for an association to become established. The extrapolation of this demonstration to humans is too tempting to resist. With the human abilities to communicate, such associations can be established by just hearing or reading about them.

William N. Tavolga
Sarasota, Florida

The pitch: A scientific study of luck. I was skeptical. Then confused. Where was the science? Or even a working definition of *luck*? And one of the four habits of lucky people is to "make lucky decisions?" C'mon.

The promise(s): love, romance, dream job, promotion. This from the Luck Factor Web site, "Lucky people meet their perfect partners, achieve their lifelong ambitions, find fulfilling careers, and live happy and meaningful lives. Their success is not due to them working especially hard, being amazingly talented, or exceptionally intelligent. Instead, they simply appear to have an uncanny ability to be in the right place at the right time and enjoy more than their share of lucky breaks." . . .

In other contexts, such as late-night TV infomercials, this would be forthright hucksterism. But what is it doing in the SKEPTICAL INQUIRER, the magazine for science and reason? Were the science, along with the references and endnotes, inadvertently left out? . . .

Ron Jackson
Linwood, New Jersey

Richard Wiseman may be a "Fellow" but this is the least scientific, most anecdotal article I have ever read in your publication. What were you thinking of? I am not a good enough writer to point out why this belongs *in a "self help" rag, but I know you are.* Another article like this and I will become a non-member.

Richard Allphin
Jamestown, Rhode Island

Richard Wiseman replies:

The luck project explores how skepticism can enhance people's lives. Most of the feedback that I have received about the article reflect the sentiments expressed by Voorhees, Zook, and Tavolga, suggesting that many SI readers consider this a worthwhile enterprise. In my article I noted that lucky people tend to be more open to new ideas and experiences than unlucky people. However, as with many other

psychological phenomena, this relationship will probably break down towards the extremes and thus Larson is right to note that continually moving to new locations will probably do little to enhance one's luck. My point was simply that being a little more open to new ideas and experiences is a good thing.

Jackson and Allphin query the scientific content of the research. The article was a summary of the work presented in my book, The Luck Factor. *This book is based on eight years of research with over 400 exceptionally lucky and unlucky people, and contains the details (including the references and endnotes) of the various standardized questionnaires, experiments, and large-scale surveys employed in the work. I hope that readers wanting to delve deeper into the scientific content of the project will find the information they need in the book, the related Web site (www.luckfactor.co.uk), and the various papers published on the topic. Jackson appears to label the research "hucksterism" simply because it aims to enhance people's lives. Clearly, the goals of the research overlap with many self-help books. However, unlike the vast majority of these books, the luck research attempts to inject some science into the area by using experiments to discover what does, and doesn't, actually work. In short, it aims to replace a superstitious understanding of luck with a more scientifically oriented approach.*

PMS Myths

As a psychiatrist, I was dismayed by the article in the May/June 2003 issue "Premenstrual Dysphoric Disorder and Premenstrual Syndrome Myths." I won't argue with the premise of the article—this is a controversial subject, and there is a wide range of theories about the existence/causes/treatment of PDD. However, I am really distressed that your magazine perpetuated the myth that doctors are a group of mindless puppets of the pharmaceutical industry or evil people who value profit over their patients' health. Saying that "Ignorance, convenience and the profit motive, not women's health, are why drug treatment is advocated" implies that doctors are stupid, lazy, greedy, and hypocritical. In addition, it ignores one obvious fact that most people don't think about: doctors, as human beings, are also patients at some time in their lives, and it is in our best interest to be sure that medicine offers the best possible treatment to ourselves and our loved ones.

Yes, if you go to a doctor, you are quite likely going to be offered a medicinal treatment. Yes, Melissa, the second author, and her sister, may have been inappropriately offered Sarafem; I would be willing to bet money it was by an ob-gyn and not a psychiatrist, but I don't think this is an issue that should be argued on the basis of anecdotes, because everyone has their "name your least favorite profession" horror story. Yes, most patients who come to me with well-documented PDD receive a medication, but keep in mind that by the time a patient comes to see a psychiatrist these days, they usually have been to a primary care physician and a therapist, and with this disorder have probably tried diet modification, vitamin supplementation, and exercise as well. My female patients are not, for the most part, passive care-seekers; they are lawyers, doctors, salespeople, teachers, and college professors, and are active participants in their own health care.

The authors do a good job of documenting the "rise" of PMS as a recognized entity in the 1960s and 1970s, but miss one other possible factor in this rise: this corresponded with the era when increasing numbers of women entered medical school. As women have become physicians and researchers, there has been more interest in mental and physical health issues that pertain solely to women. You may argue with the treatment recommendations, but isn't it great to live in an age when premenstrual symptoms, and menopausal symptoms, and indications for a hysterectomy, and long- and short-term effects of hormone supplementation (to name a few issues) are acknowledged as important and considered worthy of careful research?

I am in favor of a "holistic" treatment of PDD (as well as other mental health diagnoses). I use medications when I conclude they will be helpful, when the patient is experiencing severe functional impairment and deep distress due to her symptoms, and when the benefits outweigh the risks and side effects. I don't expect everyone to agree with the medical approach to PDD, but please, recognize that the physician's recommendations come from conclusions based on a very specific view of how the world works, and aim at improving the patient's health in a way consistent with that framework. If our recommendations don't agree with yours, it is because we approach the problem in a different way, not because we are stupid, lazy, greedy, and disinterested in our patients' health.

M. Kathy Igo, M.D.
Los Angeles, California

Stephen Flora and Melissa Sellers are right on target most of the time. Women have put up with menstruation for thousands of years without having to resort to drugs or being diagnosed with mental or emotional disorders. I survived about thirty-five years of it myself without calling in sick or making colossal mistakes or going postal whenever it was that time of the month. I have little patience with women who turn it into an illness, and nothing but disgust for those who use it has an excuse for criminal acts.

But did I get cranky? You bet! Two days of mild cramps and five days of worrying that you'll have an embarrassing leak in the middle of an important meeting is *not* cause for celebrating the reconfirmation of womanhood. I'm willing to bet that the main reason the women in *The Red Tent* looked forward to it with joy was that during that time their husbands had to give them a rest, and, very likely for the older ones, it was one more month that they weren't pregnant.

Add to menstruation the annual pain and indignity of mammograms and pap smears—that must be what happens during alien abductions—and you won't see me dancing around the room like Nancy Kwan singing, "I enjoy being a girl." Men have tried to counter with their own horror stories of bend-over-and-cough, but frankly, I'm not impressed.

However, one of my more unpleasant episodes did bring about a rare flash of spiritual insight: The Supreme Being, if there is a Supreme Being, must a God, because if He were a Goddess, She wouldn't do this to us!

Bev Kaufman
Sunrise, Florida

First of all, I agree wholeheartedly with Flora and Sellers that premenstrual hormonal changes are normal and natural and should not be classified as medical problems. The pervasive pathologization of the healthy workings of the female reproductive system irks me to a great degree, and I applaud the authors for challenging it. However, one thing about the article bothered me quite a bit: the authors' inappropriate citation of Anita Diamant's *The Red Tent* in proving that "[h]istorically and across cultures . . . menstruation was celebrated."

The Red Tent is a novel. It is a work of fiction. Fiction does not belong as evidence in a scientific or historical argument. It is possible that the authors, in reading the novel, might have run into some historical information they found useful or intriguing. If this was the case, they would have done well to consult, and cite, the historical documents from which that information was drawn.

Citation of the novel itself is shoddy

scholarship, plain and simple. It especially disappointed me to see this lapse in a magazine that purports to crusade for rigorous scholarship and empirical, rather than fictional, evidence.

As a side note, I was surprised by the authors' assertion that menstruation has been celebrated across time periods and cultures. My impression (admittedly based on ideas I picked up from random sources, and not on research of any kind) was that menstruation was often greeted with fear and superstition; menstruating women were stigmatized as unclean and thought capable of, for example, withering a field of crops with a single glance.

The Old Testament, which I believe Ms. Diamant's novel is inspired by, seems to indicate the latter view. If my impression is false, I would be very interested to know why, and to see the evidence that disproves me. The cross-cultural celebration of menstruation is a very nice, woman-positive idea, and I would be happy to see myself conclusively proven wrong.

Sally O'Brien
Orange, Connecticut

While your article on PMS was interesting, informative, and made many valid points, shame, shame for claiming that "historically and across cultures . . . menstruation was celebrated" and giving as your support a quote from a modern novel! There's enough nonsense being promoted about the supposed worldwide ancient female culture, mostly based on fiction—I didn't expect to see it in SI. Possibly many historical cultures "celebrated" menstruation, but I'd like to see documentation.

I bet monthly complainers could be found in all historical periods (oops).

Gloria Wall
Mountain View, California

I am a female who has suffered through all of the usual childhood illnesses: whooping cough, mumps (both sides), measles, german measles (twice), scarlet fever, chicken pox—you name it, I had it. Having stated that, nothing (except childbirth) was ever close to the monthly menstrual suffering I endured, without medication and without missing a day of school or any necessary functions.

I was active in many sports and later seriously studied classical ballet in New York City at a world-famous school. I never missed doing any of these activities because of menstrual problems (which, in my case, lasted at least seven or eight days each month). Sometimes, such participation in sports and in classical ballet helped to keep the awful nauseous pain from taking over completely. However, it was always there and always painful. Some women have brief and mostly painless menstrual periods—lucky for them. I fail to see how a male, such as Stephen Ray Flora, could have any knowledge of menstruation to be able to make any judgments about it and about the women who suffer through it. Perhaps he held their hands through their ordeals. Perhaps Melissa Sellers was one of those fortunate women who did not suffer much pain with menstruation. On the other hand, I have always had questions about psychiatry and psychology and their practitioners.

Lorna J. Simmons
Westland, Michigan

I was shocked by the misogynist overtones (and the bad science!) of the PMS article. I'm surprised I didn't find the archaic word "hysterical" somewhere in the article.

The authors dismiss legitimate measurable physiological premenstrual symptoms as the "misattributions" of fat and lazy female dolts brainwashed by evil anti-menstruation propaganda and too stupid to resist pill-pushing physicians.

Pardon me if I don't consider my monthly premenstrual constipation, bloating, cramps, pimples, and fits of anger to be an "essential part of life," a "gift," or a "reconfirmation of [my] womanhood." (What a load of mystic crap!)

I view menstruation and premenstrual symptoms as a liability. After 360+ periods, some of which were excruciating, I'm actually looking forward to menopause.

In the meantime, I'll continue to drug myself with ibuprofen and hope that prior to my remaining periods I won't spike my laptop into the carpet or break another pane of glass in my bookcase door or feel compelled to fling the entire contents of a file drawer around a room in order to find a single piece of paper *again*. . . .

Sandra Van Maren
Chicago, Illinois

A letter to the editor is inadequate as a critique, but I should like to make the following points about the Flora/Sellers article.

1. A dogmatic statement ("Premenstrual Dysphoric Disorder is not a disorder, illness, or disease, but an extreme point on the continuum of premenstrual tension") is not consistent with the skeptical approach to topics that are the subject of controversy.

2. An extreme point on a continuum can also be a disorder, for example consistently high blood pressure readings (hypertension).

3. Psychiatrists and psychologists do not "manufacture" disorders, although it is true that what is identified as a disease or disorder depends on a consensus of social values. For a discussion of this, see Reznek, L., Chapter 10 in the *Philosophical Defense of Psychiatry*, Routledge, London and New York 1991.

4. Having stated that PMDD is not a disorder, Flora and Sellers proceed to describe how it should be treated. Is this not a contradiction?

5. Psychiatrists *are* medical doctors trained to make a diagnosis, but prescribing medications is only one of several treatment approaches in psychiatry.

This is a disappointing article about a potentially serious condition (PMDD) that may temporarily interfere significantly with a woman's interpersonal relationships and general ability to function. It deserves a more critical examination than Flora and Sellers have given it.

P.C.S. Hoaken, M.D.
Professor Emeritus
Department of Psychiatry
Queen's University
Kingston, Ontario
Canada

Stephen Flora replies:

Quoting The Red Tent *was poor scholarship and inappropriate for the* SKEPTICAL INQUIRER. *However sources at the Museum of Menstruation and Women's Health (www.mum.org) do claim that menstruation was celebrated by females of the ancient Celtic and Druid religions and to this day by Wiccans. "A girl's first menses is celebrated in many traditions, often with the presentation of a bracelet or necklace with beads that can be moved to track her cycle" claims one writer. Heart surgeons need not have heart surgery to be good surgeons, nor does one have to be female to effectively conduct, analyze, interpret, or draw conclusions on the scientific research on menstruation. We all "experience" the sun rising and setting. But scientifically we know this is incorrect, it is an illusion. Some women may experience severe pain and psychological difficulty premenstrually, but the scientific evidence suggests this is psychosomatic, a result of conditioning and reinforcement processes. It is an*

illusion to attribute it to the natural, normal, physiological process of menstruation. Likewise, doctors may claim to "try" diet, exercise, and lifestyle modifications for a few weeks without noticing any change before they prescribe drugs for a patient "with PMDD." If a doctor prescribes Sarafem (i.e., Prozac) for the PMDD patient they may well see quick changes. However the research suggests the doctor is making a mistake. In the long run, real, sustained diet, exercise, and lifestyle modifications are more effective in reducing problems associated with menstruation than is drugging patients.

Why Not This Test?

As a long-time reader of SKEPTICAL INQUIRER, I know better than to rely on my common sense. But after trying to understand the statistical analyses in the exchanges between Gary Schwartz and Ray Hyman in the May/June 2003 issue, I have to fall back on my common sense. And my common sense tells me that if there are thousands of proficient mediums able to communicate with any or many of the billions of minds surviving after death, then there should be plenty of evidence all around us that is clear and definitive. We shouldn't have to rely on "binary 66 percent approximations" and other esoteric statistical methods.

Why can't you have one self-declared proficient medium test his ability as follows:

I have the answers to ten questions that my dead grandfather can answer in a sealed envelope. It's really very simple. All the medium has to do during a "contact session" while I'm present is get the right answers to all ten questions. Near misses or approximations don't count. And getting some and not others doesn't count. Either he was in touch with my dear departed grandfather or he was not. Either communication with minds existing after death happens or it does not. There is no statistical in between.

As a nonscientist, I'm probably missing something here. Maybe Schwartz or Hyman can tell me what it is.

David Wilcox
Walnut Creek, California

Deduction and Induction

Massimo Pigliucci is correct in saying that "it is important for anyone interested in critical thinking and science to understand the difference between deduction and induction" ("Elementary, Dear Watson" May/June 2003).

However, it has been several decades since logicians have defined that difference in terms of going from general to particulars or vice versa. General statements aren't needed in the premises of a deductive argument. For example, Socrates was a stonemason. Socrates was a philosopher. Therefore, at least one stonemason is a philosopher. This is a valid deductive argument.

Induction, says Pigliucci, "seeks to go from particular facts to general statements." That is true sometimes, but not all the time. Jones was late yesterday so he'll probably be late today is an inductive argument, albeit not a cogent one.

Any standard logic text will make the distinction in terms of arguments that claim their conclusions follow with necessity from their premises (deductive) and arguments that claim their conclusions follow with some degree of probability from their premises (inductive).

Also, the bird in Bertrand Russell's example of the problem of induction was a chicken, not a turkey.

Bob Carroll
Philosophy Department
Sacramento City College
Sacramento, California

Professor Pigliucci's discussion of the "deductions" of Sherlock Holmes interested me, because I have also been interested in the discrepancy between "deduction" in detective mysteries and "deduction" in the logic books. *Doyle's use of the word "deduction"* only reflects how the word has been commonly used—not only by ordinary people, but also by educated people. To most people, any kind of inference is a "deduction."

I don't see that it helps to say that the common usage is "wrong" and that the technical usage is "right." I would think that if one is knowledgeable on a certain subject and wants to convey that information to others, it would be best to point out that within that subject matter the use of a word differs from common usage.

If I tell someone that I have "deduced" something, they think they know what I mean. If I talk to someone about "induction," I have lost them. They think they know what I mean if I talk about "learning from experience." As with so many difficult words, one problem with "induction" is that the word has been used in so many different ways. "Induction" might mean:

- To elicit a theory.
- To verify a theory.
- To elicit a higher principle.
- To elicit an ordinary fact.

Supposedly the purpose of induction is to establish "first principles." Yet the process by which an ordinary person establishes everyday "facts" (e.g., the attributes of objects) falls right in line with descriptions of "induction." It appears to me that induction in this common form (or "epagoge," or whatever it ought to be called) does not have to be an "act of reasoning"; at times it can be an automatic process—a brain process that during the course of observation produces "intuitions" for me without any effort on my part.

The kind of inference that Sherlock Holmes frequently used can be typified in a statement that politicians are fond of: "If it walks like a duck and quacks like a duck, it's a duck." In other words, "If it has an attribute distinctive to that kind of thing, it is that thing." Apparently we can take this a step further: "If it is that thing, then it will have all of the other attributes of that thing." If it quacks, it can swim. If it's Jack's voice on the phone, then it's that rascal Jack at the other end of the line.

What is assumed in such cases is that the object has certain attributes and that some of these attributes are distinctive to the object. What we could use is a simple, non-convoluted description of this kind of inference. Apparently some of C.S. Peirce's work pertains to the matter.

Paul Christoffers
Leonardtown, Maryland

Massimo Pigliucci's description of deduction, "Deduction is a form of reasoning with which one can go from general premises to specific predictions," is misleading because there is much more to deduction than that. Take, for instance, a mathematical theorem that is easy to state such as Lagrange's Theorem: Every positive integer is the sum of four squares. According to Pigliucci, deduction is merely a method that allows us, if we accept Lagrange's Theorem, to conclude that, for instance, 100 is the sum of four squares. If that was all there was to deduction, he would be right in concluding that "deductive reasoning does not augment our knowledge of the world . . . it simply makes explicit what is already contained in the premises." In fact, Lagrange's Theorem is itself proved by deduction from basic axioms involving sets and numbers. Contrary to Pigliucci's assertion, deduction is and continues to be an

extremely powerful tool of reasoning in mathematics and the theoretical sciences that leads to complex and sometimes stunning and unexpected results.

John Grant
Baltimore, Maryland

Massimo Pigliucci replies:

Bob Carroll points out that general statements are not needed in the premises of a deductive argument, and that some inductive arguments are not meant to provide general statements. Both claims are correct, but my article referred to the use of induction and deduction in science, *not in general logic. In science, if an inductive statement is not meant to provide generalizations, it is of very little utility; similarly, deductive reasoning in scientific applications tends to start from general premises, which are themselves rooted in induction—which was the main point of my article. Russell's inductive animal was indeed a chicken, not a turkey.*

Paul Christoffers is of course correct in stating that language usage changes, and that there is little point in attempting to police such changes. However, he does admit that there is a distinction between a common and a technical usage of a term. My point in the article was not to convince people to rewrite Conan Doyle's stories (which I immensely enjoy as they are), but rather to realize that there is an important technical distinction between inductive and deductive reasoning, one that is obscured in the Sherlock Holmes books.

I agree with Christoffers that induction is probably an innate reasoning mode in humans, as well as other animals, and there is a fascinating technical literature attempting to link intuition with rational reasoning, based on their underlying neurological causes. As for the politicians' statement about ducks, of course there are mutant birds that look like ducks, walk like ducks, but don't quack....

In response to John Grant, I would point out that I certainly did not mean to dismiss or diminish the importance of deduction, in math or in science. However, his example is exactly along the lines of my argument: while it is true that Lagrange's Theorem can be deductively proven from basic axioms, the latter either have to be assumed or have to be arrived at by induction. That is what I meant when I said that all deduction, in order to augment (as opposed to make explicit) our knowledge has to —at some point—rely on induction. Given that induction itself is in turn not justifiable other than by further induction, we are still left with Hume's famous "problem" about the foundations of all human reasoning. But I am not losing any sleep over it, and neither should the reader.

Another Interpretation

While William Hoyt, Jr.'s, Forum column, "Cobb County Clowns Stage Another Pi Fight" (May/June 2003), ridicules the Cobb County, Georgia, school officials for their policy statement concerning evolution, another interpretation of their statement is that it both mollifies the religious fundamentalists and provides a wonderful opportunity for science teachers to illustrate the fallacies of creationism and demonstrate the logic and reasoning of the scientific method. If skillfully done, it will become very clear to students which approach is the most useful and productive.

Gerald C. Helmstadter
Gold Canyon, Arizona

Classic SF

The column "I Remember Doing the Time Warp" in your May/June issue raises some fascinating questions, including whether the time-viewing priest or the author of the article had been reading T. L. Sherred's classic science fiction novella, *E for Effort*, published in the May 1947 issue of *Astounding Science Fiction* and frequently reprinted since then, most notably in the *Science Fiction Hall of Fame IIB*. *E for Effort* involves the same kind of time-viewing camera and the same rationale for not releasing the invention to the public—no privacy, no secrets. In the story, after the camera is used to make truly realistic historic movies, the inventors decide to release the inventions and are eliminated by government forces who realize that it means there will be no more secrets. . . .

James Gunn
www.ku.edu/~sfcenter

Wolfram's Opus

I have several disagreements with the review of Wolfram's "A New Kind of Science" by Anutosh Moitra (May/June 2003).

1. A minor nit: Moitra calls Mathematica "a software system for solving differential equations." This is way off the mark—only a small fraction of Mathematica deals with differential equations. The rest deals with symbolic calculations (algebra, calculus, logic, programming) and numerical calculations of almost anything to arbitrary precision. Mathematica contains a large fraction of all that is known about mathematics, and certainly a lot more than is ever learned by most of us.

2. A major quarrel: Moitra distills Wolfram's thesis to this syllogism: "Algorithms based on simple rules can generate complex behavior of systems. The universe is a complex system. Therefore the universe operates through simple rules." Aside from the obvious risks in distilling any large detailed annotated volume down to such a tiny summary, this misses the mark completely. A more accurate (and correspondingly less suited for ridicule) summary would be something like: "Algorithms based on simple rules can generate complex behavior of systems. The universe is a complex system. Perhaps we can find simple rules that model the behavior of the universe."

Wolfram also shows that simple rules are sufficient to perform any computation, which is pretty surprising—they can thus generate any complexity that we can ever conceivably hope to compute. That justifies some hope. Wolfram then encourages people to start looking. He doesn't pretend that he has found the answer—he states the opposite explicitly, and tells a lot about where and how he has searched. Along the way he discusses the limitations of all mathematical systems, and addresses a variety of topics long of interest to philosophers! . . .

David B. Gustavson,
Los Altos, California

Anutosh Moitra replies:

I will grant Gustavson his small peeve regarding the capabilities of Mathematica extending beyond differential equations. I focused on differential equations because Wolfram proposes to replace them with his "new" mathematics as descriptor of the physical universe.

As for Gustavson's major quarrel, I wish Wolfram's book contained sufficient breadth and cogency of arguments to warrant the alternate syllogism Gustavson offers as a more accurate summary. Unfortunately the mammoth size of the book was not commensurate with the substantiveness of the information contained in it. The purpose of what Gustavson sees as my ridicule of Wolfram's book was really to point out that the author, however famous, of a purported book of science, whatever its merits, is not absolved of the obligation to adhere to principles of scientific discourse. Wolfram, with his unsubstantiated declarations, fails this.

False Impression?

Please correct the false impression, the misinformation and disinformation, using my name out of context, on page 20 of your May/June 2003 SKEPTICAL INQUIRER in the column "Psychic Vibrations" by Robert Sheaffer entitled "Special Forces Battle Giant Scorpions in Iraq." Sheaffer's writing that I find objectionable and damaging to me because it falsely appears that I had written and endorsed the cited misinformation is specifically:

> Jack Sarfatti passes on information that America's "greatest fear is that Saddam will reverse-engineer the crashed alien spacecraft. . . . The craft allegedly crashed during the Gulf War (1990–1991) or more recently (possibly December 1998). This will be Iraq's Roswell. The U.S. is currently reverse-engineering the Roswell craft and fears Saddam's scientists will catch up with or even go beyond the U.S. in one or more areas. These areas of research include zero point, over-ratio or gravimetric technology, which would allow for a tremendous advance, allowing Iraq to become a leading power."

I never wrote the above words between the quotes, which curiously also essentially appeared in *Pravda* January 31, 2003, http://english.pravda.ru/main/2003/01/31/42821_.html, and that at least one prominent SKEPTICAL INQUIRER reader told me gave him the false impression that I had written it.

Jack Sarfatti
sarfatti@pacbell.net

Robert Sheaffer replies:

The text in quote is actually Sarfatti's summary of someone else's position, with which he says he does not agree. However, in the past he has promoted similar accounts about saucer crashes and reverse-engineered alien technology.

Ideology as Research

I would like to update the news item reported in the May/June 2003 titled "Journal Editors Criticize MDMA Study as Nonscientific, Unethical." In a hopeful sign that Institutional Review Boards are more carefully scrutinizing mystical, paranormal psychedelic research, the Western Institutional Review Board last fall rescinded its initial approval of the MDMA/Post-traumatic Stress Syndrome study after complaints from member physicians.

The study's sponsor, the Multidisciplinary Association for Psychedelic Studies (MAPS), next submitted its proposal to another independent IRB, Independent Review Consulting (IRC) of San Francisco. In a February letter requiring major changes to the protocol, IRC expressed concern "about the most confounding element of running this study—the inevitably profound and pervasive bias of those who will control how the data in this design is collected, interpreted, and disseminated." To correct this "pervasive bias," IRC suggested a multisite study run by truly independent investigators hired by a contract research organization and that the bizarre, easily manipulated "bodywork" psychotherapeutic component be eliminated.

These modifications were unacceptable to MAPS, its president, Rick Doblin, and Michael Mithoefer, the Stanislav Grof-trained lead investigator. The application was dropped.

A third attempt at "IRB shopping" was made by MAPS in March. After one month, that unnamed IRB decided not to accept the protocol for official review. MAPS will possibly make other attempts for IRB approval. It may even try to set up its own IRB. But for now (May 2003) the study remains in well-deserved limbo, though that has not been reported anywhere in the major press.

Clearly, critical attention has been successfully brought to bear on this sorely misguided and potentially dangerous attempt to disguise ideology as "research." SI should be lauded for reporting on Dr. Sampson's and Professor Lilienfeld's criticism of this study.

E. Patrick Curry
Pittsburgh, Pennsylvania

Penn & Teller's TV Show

Kevin Christopher's review (News & Comment May/June 2003) of Penn and Teller's new TV program that exposes fraud is of interest to skeptics. However, Christopher should consider whether "conspiracy theorists" should be lumped together with other purveyors of nonsense. Conspiracy is not a mythical object, but a widespread human activity defined in state and federal laws. People have been regularly tried, convicted, and imprisoned, and even executed, for conspiracy. Before *any* crime is investigated it first exists as a plausible theory in a human mind. Obviously, officialdom believes conspiracies exist and frequently partakes of conspiracy theorizing. . . .

Robert M. Goldberg
Jericho, New York

Kevin Christopher and I watched very different episodes of *Penn and Teller's Bullshit!* His review covered the first two episodes. I watched three later episodes that lacked the objectivity and careful investigation that Christopher saw.

I watched: 1) UFOs. Interviews with the loopier guests at a convention, featuring Penn in drag.

2) Survivalists/Catastrophists. Focused on sending a man from the big city to a survivalist campout and watching him roll his eyes at what passed for survival skills.

3) Baby scams. This was probably the most thoughtful investigation. It at least showed understanding towards people that want to help their child. The "experiment" showing grown men in diapers to help understand their children was played for laughs only.

4) Anti-smoking bills. This was the worst offender of all. They set up a straw man argument that consisted of objections to one study on death rates (and only one study) and then selectively editing responses and comments on the study. They ignored every other reason in the book to ban smoking in public to concentrate on this one study. They lacked any objectivity and were not prepared to discuss the matter.

If you enjoying listening to Penn call people names, this is the show for you. But if you want a show that entertains and debunks, check out *Scooby-Doo* reruns.

Bob Ramsey
Iowa City, Iowa

The letters column is a forum for views on matters raised in previous issues. **Letters should be no more than 225 words.** Due to the volume of letters not all can be published. Address letters to Letters to the Editor, SKEPTICAL INQUIRER. Send by mail to 944 Deer Dr. NE, Albuquerque, NM 87122; by fax to 505-828-2080; or by e-mail to letters@csicop.org (include name and address).

THE COMMITTEE FOR THE SCIENTIFIC INVESTIGATION OF CLAIMS OF THE PARANORMAL

AT THE CENTER FOR INQUIRY–INTERNATIONAL (ADJACENT TO THE STATE UNIVERSITY OF NEW YORK AT BUFFALO)

AN INTERNATIONAL ORGANIZATION

Network of Affiliated Organizations

International

AUSTRALIA. Canberra Skeptics, Canberra Australia. Peter Barrett, President. PO Box 555, Civic Square ACT 2608 Australia. **Australian Skeptics Inc.,** Australia. Barry Williams, Executive Officer. Tel. 61-2-9417-2071; e-mail: skeptics@kasm.com.au. PO Box 268, Roseville NSW 2069 Australia. www.skeptics.com.au. **Australian Skeptics**—Hunter Region Newcastle/Hunter Valley. Dr. Colin Keay, President. Tel.: 61-2-49689666; e-mail: bolide@hunterlink.net au. PO Box 166, Waratah NSW 2298. **Australia Darwin Skeptics,** Northern Territory, Australia. Simon Potter, Secretary. Tel.: 61-8-8932-7552; e-mail: dwnskeptic@ais.net.au. PO Box 809, Sanderson NT 0812 Australia. **Gold Coast Skeptics,** Queensland, Australia. Lilian Derrick, Secretary. Tel.: 61-7-5593-1882; e-mail: lmderrick@telstra.easymail.com.au. PO Box 8348, GCMC Bundall QLD 4217 Australia. **Queensland Skeptics Assoc. Inc.** (Qskeptics) Queensland. Bob Bruce, President. Tel.: 61-7-3255-0499; e-mail: qskeptic@uq.net.au. PO Box 6454, Fairview Gardens QLD 4103 Australia. **South Australia Skeptics (SAS)** South Australia. Mr. Laurie Eddie, Secretary. Tel.: 61-8-8272-5881; e-mail: allang@txc.net.au. PO Box 377, Rundle Mall SA 5000 Australia. **Australian Skeptics in Tasmania Inc.,** Tasmania, Australia. Fred Thornett, Secretary. Tel.: 61-3-6234-1458; e-mail: fredthornett@hotmail.com. PO Box 582, North Hobart, TAS 7000 Australia. ***Australian Skeptics***—*Victorian Branch* Victoria. Grant Stevenson, President. Tel.: 61-3-9531-9905; e-mail: contact@skeptics.com.au. GPO Box 5166AA, Melbourne VIC 3001 Australia. www.skeptics.com.au. **WA Skeptics,** Western Australia. Dr. John Happs, President. Tel.: 61-8-9448-8458; e-mail: wa.skeptics@australiamail.com. PO Box 899, Morley, WA 6062 Australia.

BELGIUM. Comité Belge Pour L'Investigation Scientifique des Phénomènes Réputés Pananormaux Comité Para, Belgium. J. Dommanget, President of the Committee. E-mail: omer.nys@oma.be. Observatoire Royal Belgique 3, ave. Circulaire B-1180, Brussels, Belgium. www.comitepara.be. **Studiekring voor Kritische Evaluatie van Pseudowetenschap en Paranormale beweringen** (SKEPP) Belgium. Prof. Dr. W. Betz. Tel.: 32-2-477-43-11; e-mail: skepp@skepp.be Laarbeeklaan. 103 B-1090 Brussels, Belgium. www.skepp.be.

BRAZIL. OPÇAO RACIONAL, Brazil. Luis Fernando Gutman. Tel.: 55-21-548-2476; e-mail: fernandogutman@hotmail.com. Rua Santa Clara, 431 Bloco 5, Apt. 803, Copacabana-Rio de Janeiro 22041-010 Brazil. www.opcaoracional.com.br.

BULGARIA. Bulgarian Skeptics, Bulgaria. Dr. Vladimir Daskalov. E-mail: egoshev@einet.bg. Krakra 22 BG-1504 Sofia, Bulgaria.

CANADA. Alberta Skeptics, Alberta. Greg Hart, Chairman. Tel.: 403-215-1440; e-mail: hartg@human-effort.com. PO Box 5571, Station 'A', Calgary, Alberta T2H 1X9 Canada. http://abskeptics.homestead.com. **Alberta Skeptics, British Columbia Skeptics,** BC and Alberta. Lee Moller. Tel. 604-929-6299; e-mail: lee *moller@shaw.ca. 1188 Beaufort Road, N. Vancouver,* BC V7G 1R7 Canada. **Ontario Skeptics,** Ontario, Canada. Eric McMillan, Chair. Tel.: 416-425-2451; e-mail: eric@we-compute.com. P.O. Box 53003, 10 Royal Orchard Blvd., Thornhill, ON L3T 7R9 Canada. www.astro.yorku.ca/~mmdr/oskeptics.html. **Toronto Skeptical Inquirers** (TSI) Toronto. Henry Gordon, President. Tel.: 905-771-1615; e-mail: henry_gordon@hotmail.com. 343 Clark Ave., W., Suite 1009, Thornhill, ON L4J 7K5 Canada. **Ottawa Skeptics,** Ottawa, Ontario. Greg Singer. E-mail: skeptic@ottawa.com. PO Box 1237, Station B, Ottawa, Ontario K1P 5R3 Canada.www.admissions.carleton.ca/~addalby/cats/skeptic.html. **Sceptiques du Quebec,** Quebec. Alan Bonnier. Tel.: 514-990-8099. C.P. 202, Succ. Beaubien Montreal, Quebec H2G 3C9 Canada. www.sceptiques.qc.ca. **Skeptics Quinte,** Bill Broderick. 2262 Shannon Rd. R.R. 1, Shannonville, ON K0K 3A0; e-mail: broderic@kos.net.

CHINA. China Association for Science and Technology, China. Shen Zhenyu Research Center, P.O. Box 8113, Beijing China. **Hong Kong Skeptics,** Hong Kong. Brad Collins, P.O. Box 1010, Shatin Central Post Office, Shatin NT China.

COSTA RICA. Iniciativa para la Promoción del Pensamiento Crítico (IPPEC) San Jose. Victor Quiros V. Tel.: 506 275 43 52; e-mail: victorcr@racsa.co.cr. A.P. 1513-1002 Paseo de los Estudiantes San José, Costa Rica. http://webs.demasiado.com/vicr.

CZECHOSLOVAKIA. Sisyfos-Czech Skeptics Club. Czech Republic. Ms. Ing. Olga Kracikova, Secretary. Tel.: 420-2-24826691; e-mail: olgakracikova@email.cz. Hastalska 27 Praha 1 110 00 Czech Republic. www.fi.muni.cz/sisyfos/ (in Czech).

DENMARK. Skeptica: Association of Independent Danish Skeptics, Denmark. Willy Wegner. Tel.: 45-75-64-84-02; e-mail: skeptica@skeptica.dk. Vibevej 7 A DK 8700 Horsens, Denmark. www.skeptica.dk.

ECUADOR. Pablo Cevallos Estarellas. Apartado 09-01-5603 Guayaquil, Ecuador.

ESTONIA Horisont. Indrek Rohtmets. EE 0102 Tallinn, Narva mnt. 5.

FINLAND. SKEPSIS, Finland. Jukka Hakkinen. PO Box 483, Helsinki 00101 Finland.

FRANCE. AFIS, AFIS (Association Française pour l'Information Scientifique) France. Jean Bricmont, President. 14 rue de l'Ecole Polytechnique F-75005 Paris, France. **Cercle Zététique,** France. Paul-Eric Blanrue. 12 rue; David Deitz. F-57000 Metz, France. ***Laboratoire de Zététique*** *(laboratory). Professeur* Henri Broch. Tel.: 33-0492076312; e-mail:broch@unice.fr. Université de Nice-Sophia Antipolis Faculté des Sciences F-06108 Nice Cedex 2 France. www.unice.fr/zetetique/.

GERMANY. Gesellschaft zur wissenschaftlichen Unterrsuchung von Parawissenschaften (GWUP) Germany. Amardeo Sarma, Chairman. Tel.: 49-6154-695023. E-mail: info@gwup.org. Arheilger Weg 11 D-64380 Rossdorf, Germany. www.gwup.org. **European Council of Skeptical Organizations** (ECSO) Europe. Dr. Martin Mahner. Tel.: 49-6154-695023; e-mail: info@ecso.org. Arheilger Weg 11 64380 Rossdorf, Germany. www.ecso.org/.

HUNGARY. Tényeket Tisztelk Társasága TTT Hungary. Prof. Gyula Bencze. Tel.: 36-1-392-2728; e-mail: gbencze@rmki.kfki.hu. *c/o Természet Világa,* PO Box 246 H-1444 Budapest 8 Hungary.

INDIA. Atheist Centre, Dr. Vijayam, Executive Director. Benz Circle, Vijayawada 520 010, Andhra Pradesh, India. Tel.: 91 866 472330; Fax: 91 866 473433. E-mail: atheist@vsnl.com. **MaharashtraAndhashraddha Nirmoolan Samiti** (MANS) states of Maharashtra & Goa. Dr. Narendra Dabholkar, Executive President. Tel.: 91-2162-32333; e-mail: ndabholkar@hotmail.com. 155, Sadashiv Peth Satara 415001 India. www.antisuperstition.com. **Indian Rationalist Association,** India. Sanal Edamaruku. E-mail: edamaruku@vsnl.com or IRA@rationalist international.net. 779, Pocket 5, Mayur Vihar 1, New Delhi 110 091 India. Dravidar Kazhagam, southern India. K. Veeramani, Secretary General. Tel.: 9144-5386555; e-mail: periyar@vsnl.com. Periyar Thidal, 50, E.F.K. Sampath Road Vepery, *Chennai Tamil Nadu 600 007 India. www.Periyar.org.* **Indian CSICOP,** India, B. Premanand, Convenor. Tel.: 091-0422-872423; e-mail: dayamini@md4.vsnl.net.in. 11/7 Chettipalayam Road Podanur Tamilnadu 641 023 India.

ITALY. Comitato Italiano per il Controllo delle Affermazioni sul Paranormale (CICAP) Italy. Massimo Polidoro, Executive Director. Tel.: 39-049-686870; e-mail: polidoro@cicap.org. P.O. Box 1117 35100 Padova, Italy. www.cicap.org.

JAPAN. Japan Anti-Pseudoscience Activities Network (JAPAN) Japan. Ryutarou Minakami, chairperson. E-mail: skeptic@e-mail.ne.jp. *c/o* Ohta Publishing Company, Epcot Bld, 1F, 22, Arakicho, Shinjuku-ku Tokyo 160-8571 Japan. **Japan Skeptics,** Japan. Dr. Jun Jugaku. E-mail: jugakujn@cc.nao.ac.jp. Japan Skeptics, Business Center for Academic Societies, Japan 5-16-9 Honkomagome, Bunkyo-ku Tokyo 113-8622 Japan.

KAZAKHSTAN. Kazakhstan Commission for the Investigation of the Anomalous Phenomena (KCIAP) Kazakhstan. Dr. Sergey Efimov, Scientific Secretary. E-mail: efim@afi.south-capital.kz. Astrophysical Institute Kamenskoye Plato Alma-Ata, 480020 Republic of Kazakhstan. Committee for the Scientific Expertise of Claims of the Paranormal (CSECOP).

KOREA. Korea PseudoScience Awareness (KOPSA) Korea. Dr. Gun-Il Kang, Director. Tel.: 82-2-393-2734; e-mail: KOPSA@chollian.net. 187-11 Bukahyun-dong, Sudaemun-ku, Seoul 120-190 Korea www.kopsa.or.kr.

MALTA. Society for Investigating the Credibility of Extraordinary Claims (SICEC) Malta. Vanni Pule, Chairman. Tel.: 356-381994; e-mail: pulevan@vol.net.mt. P.O. Box 31, Hamrun, Malta.

MEXICO. Mexican Association for Skeptical Research (SOMIE) Mexico. Mario Mendez-Acosta, Apartado Postal 19-546 D.F. 03900 Mexico.

NETHERLANDS. Stichting Skepsis, Netherlands. Jan Willem Nienhuys, Secretary. e-mail: jnienhuy@win.tue.nl Dommelseweg 1A, 5581 VA Waalre, Netherlands.

NEW ZEALAND. New Zealand Skeptics, New Zealand, Vicki Hyde, Chair. Tel.: 64-3-384-5136; e-mail: Vicki@spis.co.nz. PO Box 29-492, Christchurch, New Zealand. www.skeptics.org.nz.

NIGERIA. Nigerian Skeptics Society, Nigeria. Leo Igwe, Convenor. E-mail: dpc@skannet.com.ng. PO Box *25269, Mapo Ibadan Oyo State, Nigeria.*

NORWAY. SKEPSIS. Norway St. Olavsgt. 27 N-0166 Oslo, Norway.

PERU. Comite de Investigaciones de lo Paranormal lo Seudocientifico y lo Irracional CIPSI-PERU, Lima, Peru. Manuel Abraham Paz-y-Mino. Tel.: +51-1-99215741; e-mail: cipsiperu@yahoo.com. El Corregidor 318 Rimac, Lima 25 Peru. www.geocities.com/cipsiperu.

POLAND. Polish Skeptics, Poland. Adam Pietrasiewicz. E-mail: redaktor@iname.com. www.biuletynsceptyczny.z.pl.

PORTUGAL. Associaçao Cépticos de Portugal (CEPO) Portugal. Ludwig Krippahl. E-mail: cepo@interacesso.pt. Apartado 334 2676-901 Odivelas, Portugal. http://cepo.interacesso.pt.

RUSSIA. Dr. Valerii A. Kuvakin. Tel.: 95-718-2178; e-mail: V.KUVAKIN@MTU-NET.RU. Vorob'evy Gory, Moscow State University, Phil. Dept. Moscow 119899 Russia. http://log.philos.msu.ru/rhs/index/htm.

SINGAPORE. Singapore Skeptics. Contact: Ronald Ng. E-mail: ronaldng@iname.com.www.skeptic.iwarp.com.

SLOVAK REPUBLIC (SACT). Slovak Republic. Igor Kapisinsky Pavla Horova, 10 Bratislava 841 07 Slovak Republic.

SOUTH AFRICA. Marian Laserson. P.O. Box 46212, Orange Grove 2119 South Africa. **SOCRATES. South Africa. Cape Skeptics,** Cape Town. Dr. Leon Retief. Tel.: 27-21-9131434; e-mail: leonr@iafrica.com. 5N Agapanthus Avenue, Welgedacht Bellville 7530 South Africa.

SPAIN. El Investigador Esceptico, Spain. Felix Ares de Blas Gámez/Ares/Martinez, P.O. Box 904, Donostia-*San Sebastian 20080 Spain.* ***ARP-Sociedad para el Avance del Pensamiento Crítico*** ARP-SAPC Spain. Félix Ares de Blas. Tel.: 34-933-010220; e-mail: arp@arp-sapc.org. Apartado de Correos, 310 E-08860 Castelldefels, Spain. www.arp-sapc.org.

SWEDEN. Swedish Skeptics, Sweden. Dan Larhammar, professor chairperson. Tel.: 46-18-4714173; e-mail: vetfolk@physto.se. Medical Pharmacology BMC, Box 593, Uppsala 751 24 Sweden. www.physto.se/~vetfolk/index.html.

TAIWAN. Taiwan Skeptics, Taiwan. Tim Holmes, PO Box 195, Tanzu, Taiwan Perspective.

UNITED KINGDOM. *The Skeptic* Magazine, United Kingdom. Mike Hutchinson. E-mail: subs@skeptic.org.uk. P.O. Box 475 Manchester M60 2TH United Kingdom.

VENEZUELA. La Asociación Racional y Escéptica de Venezuela (A.R.E.V.), Guido David Nuñez Mujica, 10th Street, 13th av. corner, Mini centro comercial Oasis, Valera, Trujillo state, Venezuela. Web site: www.geocities.com/escepticosvenezuela.

United States

ALABAMA. Alabama Skeptics, Alabama. Emory Kimbrough. Tel.: 205-759-2624. 3550 Watermelon Road, Apt. 28A, Northport, AL 35476 US. **Skeptics-Freethought Forum of Alabama**. Skeptics Freethought Forum, Richard Rich, 1801 Beech St. SE, Decatur, AL 35601-3511 US. E-mail: rrbama66@hotmail.com.

ARIZONA. Tucson Skeptics Inc. Tucson, AZ. James McGaha. E-mail: JMCGAHA@PimaCC.Pima.EDU. 5100 N. Sabino Foothills Dr., Tucson, AZ 85715 US. **Phoenix Skeptics**, Phoenix, AZ. Michael Stackpole, P.O. Box 60333, Phoenix, AZ 85082 US.

CALIFORNIA. Sacramento Organization for Rational Thinking (SORT) Sacramento, CA. Ray Spangenburg, *co-founder. Tel.: 916-978-0321; e-mail:* kitray@quiknet.com. PO Box 2215, Carmichael, CA 95609-2215 US. www.quiknet.com/~kitray/index1.html. **Bay Area Skeptics** (BAS) San Francisco—Bay Area. Tully McCarroll, Chair. Tel.: 415 927-1548; e-mail: tullyann@pacbell.net. PO Box 2443 Castro Valley, CA 94546-0443 US. www.BASkeptics.org. **Sacramento Skeptics Society**, Sacramento. Terry Sandbek, President. 4300 Auburn Blvd. Suite 206, Sacramento CA 95841. Tel.: 916 489-1774. E-mail: terry@sandbek.com. **San Diego Association for Rational Inquiry** (SDARI) President: Todd Rockhold. Tel.: (Todd's personal phone) 760 943-8977. Web site: www.sdari.org. E-mail: info@sdari.org. PO Box 623, La Jolla, CA 92038-0623

COLORADO. Rocky Mountain Skeptics (RMS) Colo., Wyo., Utah, Mont. Béla Scheiber, President. Tel.: 303-444-7537; e-mail: rmscentral@mindspring.com. PO Box 7277, Boulder, CO 80306 US. http://bcn.boulder.co.us/community/rms.

CONNECTICUT. New England Skeptical Society (NESS) New England. Steven Novella MD, President. Tel.: 203-281-6277; e-mail: board@theness.com. 64 Cobblestone Dr., Hamden, CT 06518 US. www.theness.com.

D.C./MARYLAND. National Capital Area Skeptics NCAS, Maryland, D.C., Virginia. D.W. "Chip" Denman. Tel.: 301-587-3827. e-mail: ncas@ncas.org. PO Box 8428, Silver Spring, MD 20907-8428 US. http://www.ncas.org.

FLORIDA. Tampa Bay Skeptics (TBS) Tampa Bay, Florida. Gary Posner, Executive Director. Tel.: 813-584-0603; e-mail: tbskep@aol.com. 5319 Archstone Dr. #102, Tampa, FL 33634 US. http://members.aol.com/tbskep.

GEORGIA. Georgia Skeptics (GS) Georgia. Rebecca Long, President. Tel.: 770-493-6857; e-mail: arlong@hcrc.org. 2277 Winding Woods Dr., Tucker, GA 30084 US.

IOWA. Central Iowa Skeptics (CIS) Central Iowa, Rob Beeston. Tel.: 515-285-0622; e-mail: ciskeptics@hotmail.com. 5602 SW 2nd St. Des Moines, IA 50315 US. www.skepticweb.com.

ILLINOIS. Rational Examination Association of Lincoln Land (REALL) Illinois. David Bloomberg, Chairman. Tel.: 217-726-5354; e-mail: chairman@reall.org. PO Box 20302, Springfield, IL 62708 US. www.reall.org.

KENTUCKY. Kentucky Assn. of Science Educators and Skeptics (KASES) Kentucky. Prof. Robert Baker, 3495 Castleton Way, North Lexington, KY 40502 US. Contact Fred Bach at e-mail: fredwbach@yahoo.com.

LOUISIANA. Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM) Louisiana. Marge Schroth. Tel.: 225-766-4747. 425 Carriage Way, Baton Rouge, LA 70808 US.

MICHIGAN. Great Lakes Skeptics (GLS) SE Michigan. Lorna J. Simmons, Contact person. Tel.: 734-525-5731; e-mail: Skeptic31@aol.com. 31710 Cowan Road, Apt. 103, Westland, MI 48185-2366 US. **Tri-Cities Skeptics**, Michigan. Gary Barker. Tel.: 517-799-4502; e-mail: barkerg@svol.org. 3596 Butternut St., Saginaw, MI 48604 US.

MINNESOTA. St. Kloud Extraordinary Claim Psychic Teaching Investigating Community (SKEPTIC) St. Cloud, Minnesota. Jerry Mertens. Tel.: 320-255-2138; e-mail: gmertens@stcloudstate.edu. Jerry Mertens, Psychology Department, 720 4th Ave. S, St. Cloud State University, St. Cloud, MN 56301 US.

MISSOURI. Gateway Skeptics, Missouri, Steve Best, 6943 Amherst Ave., University City, MO 63130 US. **Kansas City Committee for Skeptical Inquiry**, Missouri. Verle Muhrer, United Labor Bldg., 6301 Rockhill Road, Suite 412 Kansas City, MO 64131 US.

NEBRASKA. REASON (Rationalists, Empiracists and Skeptics of Nebraska), Chris Peters, PO Box 24358, Omaha, NE 68134; e-mail: reason01@hotmail.com; Web page: www.reason.ws.

NEVADA. Skeptics of Las Vegas, (SOLV) PO Box 531323, Henderson, NV 89053-1323. E-mail: rbanderson @skepticslv.org. Web site: www.skepticslv.org./.

NEW MEXICO. New Mexicans for Science and Reason (NMSR) New Mexico. David E. Thomas, President. Tel.: 505-869-9250; e-mail: nmsrdave@swcp.com. PO Box 1017, Peralta, NM 87042 US. www.nmsr.org.

NEW YORK. New York Area Skeptics (NYASk) metropolitan NY area. Jeff Corey, President. 18 Woodland Street, Huntington, NY 11743, Tel: (631) 427-7262 e-mail: jcorey@liu.edu, Web site: www.nyask.com. **Inquiring Skeptics of Upper New York** (ISUNY) Upper New York. Michael Sofka, 8 Providence St., Albany, NY 12203 US. **Central New York Skeptics** (CNY Skeptics) Syracuse. Lisa Goodlin, President. Tel: 315 446-3068; e-mail: info@cnyskeptics.org, Web site: cnyskeptics.org 201 Milnor Ave., Syracuse, NY 13224 US.

NORTH CAROLINA. Carolina Skeptics North Carolina. Eric Carlson, President. Tel.: 336-758-4994; e-mail: ecarlson@wfu.edu. Physics Department, Wake Forest University, Winston-Salem, NC 27109 US. www.carolinaskeptics.org.

OHIO. Central Ohioans for Rational Inquiry (CORI) Central Ohio. Charlie Hazlett, President. Tel.: 614-878-2742; e-mail: charlie@hazlett.net. PO Box 282069, Columbus OH 43228 US. **South Shore Skeptics** (SSS) Cleveland and counties. Jim Kutz. Tel.: 440 942-5543; e-mail: jimkutz@earthlink.net. PO Box 5083, Cleveland, OH 44101 US. www.southshoreskeptics.org/.

Association for Rational Thought (ART) Cincinnati. Roy Auerbach, president. Tel: 513-731-2774, e-mail: raa@cinci.rr.com. PO Box 12896, Cincinnati, OH *45212 US. www.cincinnati skeptics.org.*

OREGON. Oregonians for Rationality (O4R) Oregon. Dave Chapman, President. Tel.: 503 292-2146; e-mail: dchapman@iccom.com. 7555 Spring Valley Rd. NW, Salem, OR 97304 US. www.o4r.org.

PENNSYLVANIA. Paranormal Investigating Committee of Pittsburgh (PICP) Pittsburgh PA. Richard Busch, Chairman. Tel.: 412-366-1000; e-mail: mindful@telerama.com. 8209 Thompson Run Rd., Pittsburgh, PA 15237 US. **Philadelphia Association for Critical Thinking** (PhACT), much of Pennsylvania. Eric Krieg, President. Tel.: 215-885-2089; e-mail: eric@phact.org. PO Box 1131, North Wales, PA 19454 US. www.phact.org/phact.

TENNESEE. Rationalists of East Tennessee, East Tennessee. Carl Ledenbecker. Tel.: 865-982-8687; e-mail: Aletall@aol.com. 2123 Stonybrook Rd., Louisville, TN 37777 US.

TEXAS. North Texas Skeptics NTS Dallas/Ft Worth area, John Blanton, Secretary. Tel.: 972-306-3187; e-mail: skeptic@ntskeptics.org. PO Box 111794, Carrollton, TX 75011-1794 US. www.ntskeptics.org.

VIRGINIA. Science & Reason, Hampton Rds., Virginia. Lawrence Weinstein, Old Dominion Univ.-Physics Dept., Norfolk, VA 23529 US.

WASHINGTON. Society for Sensible Explanations, Western Washington. Tad Cook, Secretary. E-mail: K7RA@arrl.net. PO Box 45792, Seattle, WA 98145-0792 US. http://seattleskeptics.org. **Advocates for Critical Thinking**, Larry Henderson, Secretary. Tel.: 509-299-6778; e-mail: ACTinSpokane@incamail.com. 3901 S. Brooks Rd. Medical Lake, WA 99022.

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SCIENTIFIC AND TECHNICAL CONSULTANTS

George Agogino, Dept. of Anthropology, Eastern New Mexico University
Gary Bauslaugh, educational consultant, Center for Curriculum, Transfer and Technology, Victoria, B.C., Canada
Richard E. Berendzen, astronomer, Washington, D.C.
Martin Bridgstock, Senior Lecturer, School of Science, Griffith University, Brisbane, Australia
Richard Busch, magician/mentalist, Pittsburgh, Penn.
Shawn Carlson, Society for Amateur Scientists, East Greenwich, RI
Roger B. Culver, professor of astronomy, Colorado State Univ.
Felix Ares de Blas, professor of computer science, University of Basque, San Sebastian, Spain
Michael R. Dennett, writer, investigator, Federal Way, Washington
Sid Deutsch, consultant, Sarasota, Fla.
J. Dommanget, astronomer, Royale Observatory, Brussels, Belgium
Nahum J. Duker, assistant professor of pathology, Temple University
Barbara Eisenstadt, psychologist, educator, clinician, East Greenbush, N.Y.
William Evans, professor of communication, Center for Creative Media
John F. Fischer, forensic analyst, Orlando, Fla.
Robert E. Funk, anthropologist, New York State Museum & Science Service
Eileen Gambrill, professor of social welfare, University of California at Berkeley
Sylvio Garattini, director, Mario Negri Pharmacology Institute, Milan, Italy
Laurie Godfrey, anthropologist, University of Massachusetts
Gerald Goldin, mathematician, Rutgers University, New Jersey
Donald Goldsmith, astronomer; president, Interstellar Media
Alan Hale, astronomer, Southwest Institute for Space Research, Alamogordo, New Mexico
Clyde F. Herreid, professor of biology, SUNY, Buffalo
Terence M. Hines, professor of psychology, Pace University, Pleasantville, N.Y.
Michael Hutchinson, author; SKEPTICAL INQUIRER representative, Europe
Philip A. Ianna, assoc. professor of astronomy, Univ. of Virginia
William Jarvis, professor of health promotion and public health, Loma Linda University, School of Public Health
I. W. Kelly, professor of psychology, University of Saskatchewan
Richard H. Lange, M.D., Mohawk Valley Physician Health Plan, Schenectady, N.Y.
Gerald A. Larue, professor of biblical history and archaeology, University of So. California.
William M. London, consumer advocate, Fort Lee, New Jersey
Rebecca Long, nuclear engineer, president of Georgia Council Against Health Fraud, Atlanta, Ga.
Thomas R. McDonough, lecturer in engineering, Caltech, and SETI Coordinator of the Planetary Society
James E. McGaha, Major, USAF; pilot
Joel A. Moskowitz, director of medical psychiatry, Calabasas Mental Health Services, Los Angeles.
Jan Willem Nienhuys, mathematician, Univ. of Eindhoven, the Netherlands
John W. Patterson, professor of materials science and engineering, Iowa State University
Massimo Pigliucci, *professor of evolutionary biology*, University of Tennessee, Knoxville
James Pomerantz, Provost, and professor of cognitive and linguistic sciences, Brown Univ.
Gary P. Posner, M.D., Tampa, Fla.
Daisie Radner, professor of philosophy, SUNY, Buffalo
Robert H. Romer, professor of physics, Amherst College
Karl Sabbagh, journalist, Richmond, Surrey, England
Robert J. Samp, assistant professor of education and medicine, University of Wisconsin-Madison
Steven D. Schafersman, asst. professor of geology, Miami Univ., Ohio
Béla Scheiber,* systems analyst, Boulder, Colo.
Chris Scott, statistician, London, England
Stuart D. Scott, Jr., associate professor of anthropology, SUNY, Buffalo
Erwin M. Segal, professor of psychology, SUNY, Buffalo
Carla Selby, anthropologist/archaeologist
Steven N. Shore, professor and chair, Dept. of Physics and Astronomy, Indiana Univ. South Bend
Waclaw Szybalski, professor, McArdle Laboratory, University of Wisconsin-Madison
Ernest H. Taves, psychoanalyst, Cambridge, Mass.
Sarah G. Thomason, professor of linguistics, University of Pittsburgh
Tim Trachet, journalist and science writer, honorary chairman of SKEPP, Belgium.
David Willey, physics instructor, University of Pittsburgh

*Member, CSICOP Executive Council
°Associate Member, CSICOP Executive Council

CENTERS FOR INQUIRY

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FLORIDA
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Tel.: (727) 209-2902

FRANCE
Prof. Henri Broch,
Universite of Nice, Faculté des Sciences,
Parc Valrose, 06108, Nice cedex 2. France
www.unice.fr/zetetics/

PERU
D. Casanova 430, Lima 14, Peru

EUROPE
Dr. Martin Mahner
Arheilger Weg 11, D-64380 Rossdorf, Germany
Tel.: +49 6154 695023

MOSCOW
Professor Valerii A. Kuvakin
119899 Russia, Moscow, Vorobevy Gory,
Moscow State University, Philosophy Dept.

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The Helix Nebula

This photograph of the coil-shaped Helix Nebula is one of the largest and most detailed celestial images ever made. The image shows a fine web of filamentary "bicycle-spoke" features embedded in the colorful red and blue ring of gas. At 650 light-years away, the Helix is one of the nearest planetary nebulae to Earth.

Credit: NASA, NOAO, ESA, the Hubble Helix Nebula Team, M. Meixner (STScI), and T.A. Rector (NRAO).

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